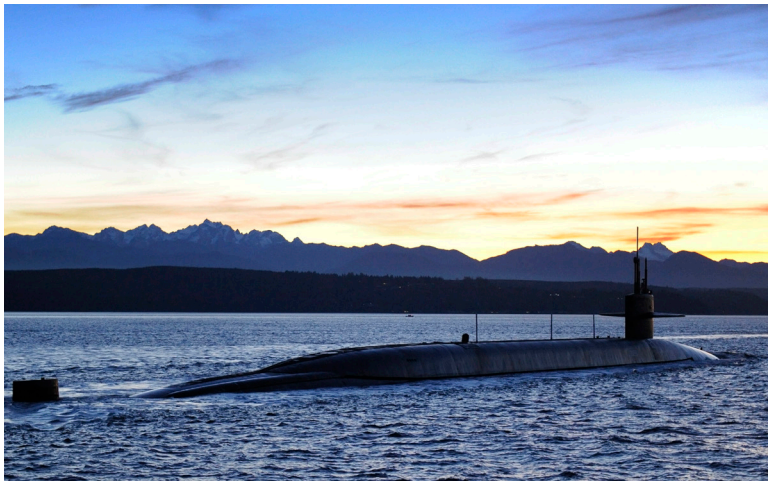
2015 | REPORT TO CONGRESS ON
SUSTAINABLE RANGES



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2015 EXECUTIVE SUMMARY

This is the twelfth Report to Congress on Sustainable Ranges (SRR), which summarizes the Department of Defense's (DoD) actions to ensure the long-term sustainability of its training ranges. The SRR responds to Section 366 of the fiscal year (FY) 2003 National Defense Authorization Act (NDAA), which requires DoD to develop and submit to Congress a comprehensive plan to address training constraints caused by limitations on the use of available military lands, offshore areas, and airspace in the United States and overseas. Section 311 of the FY2013 NDAA extended the reporting requirement through FY2018.

Although this report focuses on DoD training ranges only, it also touches on test and evaluation (T&E) ranges to the extent that these ranges support training activities. The DoD test community separately reports on encroachment factors affecting research, development, test, and evaluation activities in their *Strategic Plan for T&E Resources*. The training and testing communities, with the support of installations and environment, continue to work together to address encroachment issues under the Sustainable Ranges Initiative (SRI).

While DoD has been actively addressing the many challenges related to range capabilities and encroachment, those challenges continue to grow, new ones emerge, and dynamic conditions and events exacerbate the original challenges. These challenges are common themes that resonate throughout this year's report and are highlighted below.

SUMMARY OF IDENTIFIED TRAINING RANGE CAPABILITY ISSUES

The implementation of the Budget Control Act of 2011 continues to affect DoD and the Military Services through changes in force structure and significant reductions in funding for operations and maintenance (O&M), military construction (MILCON), research and development (R&D) investments, as well as acquisition programs. These limitations affect training range capabilities. The Department continues to anticipate that funding reductions will affect both training range capability and the Department's ability to respond to encroachment challenges moving into the future. The Military Services also identified significant challenges they face with both insufficient resources (e.g., special use airspace [SUA], insufficient training range land) as well as equipment and systems requiring updates in order to complete current training requirements. Finally, DoD is facing the challenge of unmanned aerial systems (UAS) training with their unique airspace requirements, as increasing numbers are returning from overseas contingency operations.

SUMMARY OF IDENTIFIED TRAINING RANGE ENCROACHMENT ISSUES

The Military Services continue to face encroachment challenges. Meeting DoD's Endangered Species Act (ESA) responsibilities for the imperiled species that occupy the military lands on which DoD must train continues to present management challenges, some of which are highlighted in this report. Incompatible development and land use adjacent to DoD training activities continues to pose an encroachment challenge. The issue of foreign investment located in proximity to military training areas and potential operational security concerns present a national security and encroachment challenge to DoD; the Department is pursuing opportunities to obtain information related to foreign investment from agencies with land and airspace management authority. Effects related to the reallocation of electromagnetic spectrum as a result of the National Broadband Plan remain a concern to each of the Military Services due to the reduction of available military frequencies.

This year's report discusses the effect of capability limitations and encroachment challenges in greater detail. The 2015 SRR provides Congress with updates to the 2014 SRR, including a comprehensive update to the individual training range capability and encroachment assessments for all four Military Services last reported in 2012. Additionally, the 2015 SRR includes the following:

- Critical range and training issues identified by the Military Services
- Current and future Military Service training range requirements
- DoD's comprehensive training range sustainment plan
- A complete update to the range inventory.

DoD is providing Congress with a comprehensive update to the individual assessments with detailed data on encroachment and range capability factors affecting DoD ranges every three years. This year's report represents the third year in the cycle; the report last included assessments in 2012. The three-year cycle decision was based on the analysis that range capability and encroachment did not change significantly from year to year. The next full range assessment will take place in FY2017 and be reported as part of the 2018 SRR.

1 MILITARY SERVICE UPDATES

1.1 ARMY

The Army's updated training range assessments for 2015 are included in Chapter 2 of this report. The discussion in this section highlights key issues and serves as a means to augment the range assessment data.

GENERAL ISSUES RELATED TO RANGE CAPABILITY AND ENCROACHMENT

While capabilities are currently at an acceptable level to support readiness, there are still numerous challenges the Army is working to address related both to capability and encroachment, including reductions and reorganization of the Army's Active Component (AC) force as well as endangered and candidate species management and its potential to affect the Army training mission.

CRITICAL ISSUES: RANGE CAPABILITIES

DoD mission and fiscal considerations have continued to change, and the future end-strength of the Army must be reduced even further than the 490,000 discussed in the 2014 SRR. The 2014 Quadrennial Defense Review (QDR) states that the active Army will be reduced from its war-time high of 570,000 to 440,000–450,000 Soldiers. The Army expects to meet an end strength of 490,000 by the end of FY2015, and an end strength of 450,000 by the end of FY2017. The 2014 QDR also states if sequestration-level cuts are imposed in FY2016 and beyond, the Army would reduce AC end-strength to 420,000. Reductions of these magnitudes will have a significant effect on Army range complexes, and range modernization plans will be adjusted based on stationing decisions.

SUMMARY OF MAJOR CHANGES IN RANGE CAPABILITY

The Army recently constructed and instrumented its first Digital Air/Ground Integration Range (DAGIR) at Fort Bliss. This complex is used to train and test aviation crews, teams, platoons, companies/troops along with Armor, Infantry, Stryker, unstabilized platforms, and convoy live fire crews, sections, squads, and platoons on skills necessary to detect, identify, and effectively engage stationary and moving infantry and/or armor targets in a tactical array. It also supports the Stryker – Mobile Gun System and dismounted infantry squad/platoon tactical live-fire operations, either independently of, or simultaneously with, supporting vehicles. Company combined arms live-fire exercises (CALFEX) and fully integrated advanced gunnery events can be conducted at this facility, and this complex also accommodates training with subcaliber and/or laser training devices. Military Operations on Urban Terrain (MOUT) and convoy live-fire facilities are required to enable diving-fire engagement to specified streets/intersections and aerial engagements in close proximity to friendly forces on adjacent terrain. Additionally, the DAGIR will enable critical air-ground integration tactics, techniques, and procedures (TTP) training to ensure the optimum teaming of ground and air, Army, and joint platforms.

The Army is also implementing the Joint Pacific Multinational Readiness Capability (JPMRC) in U.S. Army Pacific (USARPAC). As part of JPMRC, the Army has established a mobile instrumentation system (IS), initially in Hawaii, to support force-on-force maneuvers. The Army conducted a battalion-level First Unit Assessment (FUA) exercise on Oahu in July 2014. The FUA included three major missions and a downed pilot rescue. The missions consisted of an attack to seize the Combined Arms Collective Training Facility (CACTF) at Kahuku Training Area, followed by a defense of the CACTF, and then a follow-on attack on the MOUT site at South Range. The instrumentation provided streaming video feed and tracked Soldiers conducting the personnel recovery mission at Dillingham Airfield. The instrumentation also tracked and relayed Instrumentable-Multiple Integrated Laser Engagement System (iMILES) engagement

information for the attack on the MOUT site at South Range. While the JPMRC instrumentation is a great capability, the center of gravity for JPMRC is still the Operations Group and Observer-Controller-Trainers (OCTs). The Army will demonstrate an initial operating capability (IOC) in June 2015 that will support a dispersed brigade-level exercise on the island of Oahu. Eventually, the JPMRC and associated IS will be deployable to Alaska, the Republic of Korea, and partner nations in the Pacific Area of Responsibilities.

SUMMARY OF EMERGING CAPABILITY ISSUES

The Army will target additional DAGIR construction for programming at ranges that will support medium or heavy combat aviation brigades (CABs). Ranges with light CABs or smaller units will address aviation requirements in existing or programmed facilities (Digital Multi-Purpose Range Complex [DMPRC], Digital Multi-Purpose Training Range [DMPTR], and Battle Area Complex [BAC]). The next DAGIR is programmed for construction in 2020 for Fort Knox, Kentucky, to support the 101st CAB.

FUTURE CAPABILITY OUTLOOK

The Army will focus on deploying Targetry Range Automated Control and Recording (TRACR)—a single common target controller for all Army targets and ranges identified with a common look and feel and an integrated graphical user interface in accordance with the Live Training Transformation (LT2) style guide and in compliance with the Common Training Instrumentation Architecture. The single target controller controls legacy and modern targets and allows for commercial-off-the-shelf system integration via standard interface documentation to allow industry to create their own interfaces and/or adapters. Over 500 Army ranges will benefit from this common target controller.

CRITICAL ISSUES: ENCROACHMENT

The lands, airspace, and waters of Army ranges are vitally important to support Army mission requirements, including training and testing. Army ranges also have significant responsibilities for managing natural resources to maintain lands and vegetative cover for training and testing activities, and compliance with environmental regulatory requirements (e.g., Endangered Species Act [ESA], Clean Air Act [CAA], Clean Water Act [CWA]). Geophysical and hydrological effects, habitat transitions, and direct physiological impacts of increasing temperatures and altered precipitation patterns resulting from climate change will have significant consequences for Army land, water, and environmental management programs and regulatory compliance. Erosion control and maintenance of vegetative cover are important for training lands access, maintaining military line of sight, and meeting water quality requirements.

SUMMARY OF MAJOR CHANGES IN ENCROACHMENT LIMITATIONS

Endangered Species on Army Ranges

Endangered species compliance on Army ranges remains one of the most challenging environmental compliance issues affecting military training and operations. The majority of Army ranges with training and testing missions support populations of one or more federally-listed species, as well as state-listed species and other species of conservation concern. There is a significant emphasis and investment on Army ranges to obviate the need for regulatory restrictions by intensively managing habitat and reducing effects on resident endangered species populations resulting from military activities.

Specific changes in encroachment limitations observed in the last year from endangered species involve Joint Base Lewis-McChord (JBLM) and Yakima Training Center (YTC). There are three Brigade Combat Teams (BCTs) and seven Functional/Multi-Functional Brigades assigned to JBLM. JBLM has implemented important conservation actions to address habitat needs for the Taylor's checkerspot butterfly, an ESA-listed species. YTC has also implemented conservation actions to address habitat needs for the ESA-candidate greater sage grouse. These actions include seasonal and permanent restrictions on some off-road maneuvers; limits on certain types of dismounted maneuver activities, such as digging fighting positions; and limits on the use of certain munitions. JBLM and YTC are also facing the need to address habitat requirements for several additional candidate species proposed for listing as threatened or endangered. Without thoughtful management, new listings could lessen the Army's ability to train units to proficiency in preparation for wartime operations. Additional resources will also likely be needed to address mitigation, monitoring, and new range procedures to ensure compliance.

SUMMARY OF EMERGING ENCROACHMENT ISSUES

Climate Change

Habitat transition or modification as a result of climate change will increasingly challenge the ability of ranges to maintain the status of current endangered species populations and may result in new listings of species currently at risk. In addition, many ranges conduct extensive prescribed burning programs in upland habitats for training range maintenance, endangered species habitat management, wildlife management, and invasive species control. Climate change effects on the ability to conduct burn programs may have implications for ESA and CAA compliance.

ARMY SPECIAL INTEREST SECTION

Army and the Readiness and Environmental Protection Integration (REPI) Program

Encroachment threats include changing patterns of land use and habitat transition, which could restrict the Army's ability to fully use its training areas. It also is an issue for the communities outside of the fence line, which can be affected by noise and other effects from training. DoD collaborates with conservation organizations, state governments, and local governments to acquire easements surrounding ranges through the REPI Program. The Army carries out its REPI authority through the Army Compatible Use Buffer (ACUB) Program. Through the ACUB program, the Army works with partners to limit incompatible land uses on buffer lands around critical ranges to ensure continued range access and use. Although the Army may contribute a portion of the funds for the partner's purchase of such buffer lands, the ACUB program does not acquire new land for Army use. These buffers can also support the preservation of essential natural resources and habitats. The Army continued to make strides through the ACUB program, increasing the amount of protected acreage surrounding 28 Army installations to 207,528 through FY2012 and 231,562 through FY2013. Since 2003, these privately held buffer properties, which have the added benefit of aiding conservation efforts, have been purchased using a combination of military funds ($352 million) and conservation partner investments ($292 million).

Army Force Structure Reductions

The Army's reduced force structure will have an impact on infrastructure. With the end of ground combat operations in Iraq and Afghanistan, the Army will be on a path to shrink its active-duty component strength from its peak of 570,000 Soldiers, to between 440,000 and 450,000. This reduction of 120,000 to 130,000 Soldiers, or about 22 percent, will affect every installation in the Army. For instance, aging infrastructure and ranges at some installations may not be required with a smaller force. In the Continental United States (CONUS), the Army would like to address excess and shortfalls in facility requirements through the Base Realignment and Closure (BRAC) process. The Army needs additional BRAC authorization to reduce excess infrastructure and consolidate on the most modern capabilities.

DoD directed a European Infrastructure Consolidation (EIC) review for the purpose of reducing expenses by eliminating excess infrastructure in Europe. The Army's strategy is to consolidate on larger, more capable installations, divest older and inadequate infrastructure, and invest in the remaining footprint to provide adequate facilities to accomplish its mission, while meeting training needs. The Army has been downsizing its footprint in both Europe and Asia for many years in the post-Cold War era. Since 2006, Army end strength in Europe decreased by 45 percent and the Army will continue to shrink the supporting infrastructure, overhead, and operating budgets by about half. The impact to ranges and training areas in Europe will be addressed by consolidating forces where training capability resides.

1.2 MARINE CORPS

The Marine Corps' updated range assessments for 2015 are included in Chapter 2 of this report. The discussion in this section highlights key issues and serves as a means to augment the range assessment data.

GENERAL ISSUES RELATED TO RANGE CAPABILITY AND ENCROACHMENT

The Mission Capable Ranges Program is designed to meet the guidance of the *Marine Corps Service Campaign Plan (MCSCP)*, and supports the concepts published in the *Commandant of the Marine Corps' Planning Guidance and Expeditionary Force 21* by providing the Marine Corps with a comprehensive, fully developed range program that defines current, emerging, and future range requirements.

The Mission Capable Ranges Program executes range modernization and sustainment initiatives focused on the diverse training needs of Marine Air Ground Task Forces (MAGTF). The cornerstones of the program are (1) range modernization through investments that provide new range capabilities to address emerging

operational training requirements; (2) recapitalization through expenditures that upgrade or replace existing range capabilities that are destroyed or damaged beyond repair; (3) sustainment with expenditures that provide the O&M of existing range capabilities/systems and provide capacity with range safety and range operations services; and (4) prevention of encroachment through identification and active intervention for encroachment issues affecting the ranges.

A substantial, ongoing commitment of resources is required to address each of these categories. Further, in recognition of the currently constrained fiscal climate, the Marine Corps has shifted funding from investment in new ranges and systems in the FY2015 Future Years Defense Program (FYDP) to better ensure the adequate sustainment of current capability. *Expeditionary Force 21* and *MCSCP* advance the post-Operation Enduring Freedom requirements to train scalable MAGTFs and their component units in an expanding number of essential missions. The broad spectrum of training requirements and greater capability of weapons systems increases demand for ranges to support multiple training missions, leading to more intensive use of Marine Corps installations for individual and unit-level training, as well as concentrated maneuver, live-fire engagements, and amphibious operating and training areas for MAGTF-level training.

Concurrently, the requirements of a 21st century battle-space will increase the demand for extensive training areas and airspace that exceed the limitations of a single installation. The lack of adequate training lands and SUA will require range managers and Operating Force trainers to address training capability shortfalls with a mix of off-base solutions and regional training range capabilities. Moreover, as Marine Corps forces are re-deployed from contingency operations to home stations, the training load on bases will increase. More intensive and extensive training demands on Marine Corps installations, other DoD installations, and non-DoD lands and airspace used for training are to be expected, notwithstanding reductions in the size of the force. Any decrease in range demands due to force reductions will be more than offset by expansion in the spectrum of training requirements and the increase in overall training area necessary to execute them.

In summary, Marine Corps installations will be required to support training of Marines and Marine Corps units in an expanding array of mission-essential tasks that require ever-increasing amounts of training space and increasingly sophisticated range resources. To that end, the Marine Corps views ranges and training area resources not as disparate isolated locations, but as an interdependent system of Marine Corps, DoD, and non-DoD resources, with the Marine Corps providing core ranges for live-fire and maneuver training, and amphibious access and mobility corridors for the projection of forces inland.

CRITICAL ISSUES: RANGE CAPABILITIES

The Marine Corps has previously identified Service-level deficits in its ability to train for the many missions linked to maintaining a first-rate, well trained, total force of Marines. Continued analysis and the fielding of new systems may cause other requirements to surface in the future, but today the projected operational range requirements at the Service-level focus on the following critical deficiencies:

- Marine Corps ranges have lacked the capability to fully exercise a large MAGTF in a realistic, doctrinally appropriate training scenario. Specifically, the Marine Corps Air Ground Combat Center (MCAGCC) at Twentynine Palms, as the center of excellence for developing and executing combined arms live-fire training of the MAGTF, has not been able to accommodate a full-scale, live-fire Marine Expeditionary Brigade (MEB) exercise. With significant congressional support, the expansion of MCAGCC will correct this training and readiness deficiency and significantly enhance the Marine Corps' ability to continue providing fully-capable MAGTFs in pursuit of national security objectives. The 2014 NDAA, signed by the President in December 2013, authorized the withdrawal of approximately 103,000 acres for exclusive military use and an additional 50,000 acres for joint military and recreational use in the Johnson Valley, contiguous to the current installation boundary. Land acquisition efforts are underway, and a formal airspace proposal supporting the land expansion has been submitted to the Federal Aviation Administration (FAA). Use of the land for training will "phase in" over the next several years as policies and procedures are put in place to manage the land.
- Inadequate live-fire and maneuver training opportunities exist for the Marine units stationed in the Western Pacific and Hawaii. Marine Corps ranges in Hawaii and Okinawa lack sufficient capabilities to fully support training for their assigned units. Consequently, these units must satisfy their training requirements on other-Military Service facilities, particularly U.S. Army ranges in Hawaii or U.S. Air Force and Japanese ranges in Okinawa and Japan. It is a constant challenge to de-conflict the various Military

Service missions to ensure Marines receive adequate training opportunities. The Marine Corps is in the process of assessing approaches to the challenging issue of mitigating range deficiencies in Hawaii by establishing additional training areas and aviation training opportunities. This problem will be further exacerbated in coming years as some Okinawa-based forces relocate to Hawaii as part of the Defense Policy Review Initiative (DPRI). DPRI also includes relocating deploying units from Okinawa to Guam and developing associated basic training ranges and infrastructure. On Guam, individual Marine skills ranges are part of the Guam Supplemental Environmental Impact Statement (EIS). In a separate action, U.S. Pacific Command (PACOM), with the Marine Corps as executive agent, has sponsored the Commonwealth of the Northern Mariana Islands Joint Military Training (CJMT) EIS to address existing and future training deficiencies in the Western Pacific, specifically the Mariana Islands. The CJMT EIS effort is studying the possibility of developing new unit and combined arms training range capability and capacity in the Commonwealth of the Northern Mariana Islands (CNMI). These ranges will provide additional training opportunities for Marines stationed in Okinawa and Hawaii. Finally, efforts to establish training opportunities in Australia are also underway to address Western Pacific units' training area shortfalls.

- The Marine Corps has identified the need for an aviation training range on the East Coast of the United States with range capabilities to support the use of precision guided munitions (PGM). To address this requirement, the Marine Corps has assessed potential alternatives, including expanding the Townsend Bombing Range in Georgia. Based on a thorough assessment of area capabilities, a Final EIS for the Proposed Modernization and Expansion of Townsend Bombing Range was publicly distributed in March 2013, selecting the expansion of Townsend Bombing Range as the best alternative for securing this East Coast capability. A Record of Decision (ROD) was signed during January 2014, and acquisition efforts are underway. Full operational capability (FOC) is planned for July 2017.
- As affirmed in Expeditionary Force 21, the capability to fight from the sea and to operate within the littorals is a core Marine Corps competency. The Marine Corps, as an innovative, relevant, naval, expeditionary force in readiness, is committed to preserving and enhancing the capabilities of its primary amphibious training bases at Camp Pendleton and Camp Lejeune, and to developing opportunities for increased littoral training in Hawaii. These installations lack fully developed maneuver corridors, training areas, and airspace to adequately support ground and air maneuvers inland from landing beaches. Addressing these deficits is a priority and is currently under study.

SUMMARY OF MAJOR CHANGES IN RANGE CAPABILITY

Changes in range capabilities tend to be incremental; therefore, any year-to-year changes in capability are generally minor. Major changes are likely to be apparent only in trends measured over multi-year periods or at the completion of major initiatives, such as the range expansions at the MCAGCC Twentynine Palms and proposed range expansion of Townsend Bombing Range. Detailed assessments completed through this FY2015 SRR have provided a basis for assessing capability trends and identifying significant changes to range capabilities.

SUMMARY OF EMERGING CAPABILITY ISSUES

An uncertain and declining fiscal environment may affect the ability of the Marine Corps to invest in required training infrastructure and to effectively manage its required existing resources in support of training. In particular, fiscal constraints likely will severely restrict investment in new ranges required to support training in advanced weapon systems. For example, in addition to expanding Townsend Bombing Range and SUA at MCAGCC Twentynine Palms, the Marine Corps is engaged in developing airspace access, landing zones, and range support requirements to accommodate MV-22 Osprey and UAS capabilities, and in determining range and airspace needs for the Joint Strike Fighter (JSF). The Chocolate Mountain Aerial Gunnery Range (CMAGR), the subject of a recent successful transfer of administrative jurisdiction from the U.S. Department of Interior (DOI) to the U.S. Department of Navy (DON) in the FY2014 NDAA, will enhance range and airspace capabilities in support of Marine Corps and Special Operations unit training. The ability to support these acquisitions with the appropriate range infrastructure will be challenged by the lack of resources. The Mission Capable Ranges Program is also increasing its emphasis on supporting implementation of advanced range systems technologies, particularly reactive targets and video/audio capture intended to make

After Action Review (AAR) more accurate and responsive. The Marine Corps is engaged in developing a plan to address outdated combat marksmanship facilities and infrastructure that includes updated scoring systems and target arrays based on best practices. The Marine Corps has invested over $800 million dollars in range capabilities over the past decade; and the provision of modern, capable training ranges remains a Service priority as articulated in the MCSCP. Future programming for procurement of new range-related investments, however, is substantially reduced in the current funding climate. Funding priority is instead allocated to sustainment and recapitalization of existing capabilities. The FY2015 level of O&M funding will meet the basic requirements of sustaining current capabilities. Future fiscal reductions may adversely impact the Marine Corps' ability to maintain range resources. Without sufficient commitments focused at a minimum on maintenance and re-capitalization, today's range capabilities will become tomorrow's liabilities, with adverse impacts on the ability of Marine Corps installations to support required training with mission-capable ranges.

FUTURE CAPABILITY OUTLOOK

The Marine Corps expects its range capabilities to continue to evolve in support of the tenets of Expeditionary Force 21 and the MCSCP. Meeting the demands of the Operating Forces for ranges with the capabilities and capacities to support dynamic training across the range of military operations will, of course, require predictable and consistent funding for range maintenance and for the most critical expansions to correct for known training and readiness deficiencies. Failure to realize the objectives of key initiatives, including the expansion of Townsend Bombing Range and the establishment of Guam/CNMI ranges, the further development of installation-level combined arms live-fire and maneuver space, and the reduction of constraints on amphibious landing beaches, would introduce risks to the training enterprise that would require reevaluation of the adequacy of range capabilities.

CRITICAL ISSUES: ENCROACHMENT

Encroachment that constrains the use of Marine Corps ranges for realistic military training remains a significant concern. Continued population growth, increased levels of environmental regulation, and expanding development in the regions home to Marine Corps installations generate pressure on scarce resources (land, airspace, water space, radio frequency spectrum) critical to current and future military training, testing, and general mission activities. The Marine Corps programmatically assesses and addresses encroachment issues.

The most significant encroachment issues at Marine Corps range complexes include impacts on maneuver combined with live-fire training from the presence of species listed under the ESA, restrictions on allowed munitions, degraded access to the frequency spectrum, noise-based restrictions on training, and incompatible adjacent land uses. Encroachment also affects Marine Corps installations that do not provide significant range resources, but are home to operational forces that utilize nearby training areas. Encroachment at these installations also affects training and mission readiness.

The Marine Corps manages significant sources of encroachment to minimize impacts on training while complying with applicable regulations, and this requires a substantial commitment of resources. The Marine Corps continues to address all areas of encroachment aggressively with focused programs, such as Encroachment Control Plans (ECPs), Encroachment Partnering (through the REPI Program), and Joint Land Use Studies (JLUSs), Air Installation Compatible Use Zone studies, and Range Compatible Use Zone studies, which have achieved notable successes. Nevertheless, the Marine Corps remains concerned that encroachment continues to present a substantial threat to the capability of installations to perform their military missions.

SUMMARY OF MAJOR CHANGES IN ENCROACHMENT LIMITATIONS

Changes in encroachment impacts tend to be incremental. Major changes are likely to be apparent only in trends measured over multi-year periods or as the result of new initiatives, such as an increased demand for renewable energy or the listing of new species as threatened or endangered. Detailed assessments completed as part of this FY2015 SRR have provided a basis for assessing encroachment trends and identifying significant changes in encroachment limitations.

SUMMARY OF EMERGING ENCROACHMENT ISSUES

Within Marine Corps Installations Command (MCICOM), the G-7, Government and External Affairs Directorate, is responsible for encroachment management in support of mission requirements. This role is critical to Marine Corps operations and training as ongoing and emerging types of encroachment continue to challenge the capability of Marine Corps

ranges to accomplish their mission. Among these emerging encroachment issues is the increasing rate of renewable energy development in the vicinity of installations and training space. Development of wind, solar, and geothermal power and associated transmission infrastructure both on- and off-shore will require close attention, creative planning, and proactive effort to ensure the Marine Corps' access to training areas in the air, on land, and within the electromagnetic spectrum is not degraded. This has been problematic in eastern North Carolina and the desert southwest, but also poses a particular threat to operations in Hawaii. The nature of Hawaii's location, geography, and the needs of its people make it ripe for competing land uses. The Marine Corps' ability to train in Hawaii, especially on and around Oahu, stands to be critically threatened, particularly by wind energy development, unless close partnerships with key stakeholders are sustained in support of solutions that accommodate renewable energy initiatives without negative impacts to essential training space. This concern is not limited solely to Hawaii. The Marine Corps will have to remain attuned to similar encroachment challenges at its other Pacific installations. Climate change has potentially wide-ranging effects, especially in the coastal areas where the Marine Corps trains and operates. The Marine Corps is concerned that such effects could alter the capabilities of installations over time; therefore, these risks must be analyzed, monitored, and addressed in installation planning.

Emerging encroachment issues have the potential to be exacerbated as new weapon systems enter the inventory and/or re-deploy from combat. For example, the F-35, MV-22, KC-130J Harvest Hawk, and the burgeoning UAS inventory bring new capabilities to the Marine Corps that require greatly expanded training areas. Encroachment not only impacts access to existing training space, but also affects the ability of the Marine Corps to access the extended training areas and airspace necessary to train to standards using new systems and associated tactics and procedures.

Realistically, there are insufficient resources to acquire, through real estate and easements actions, adequate range availability for the Marine Corps' combined arms training needs. Range availability will, therefore, rely on mutually beneficial partnerships that support access to air, land, sea, and frequency space beyond range boundaries. As manned and unmanned warfighting platforms require increasing standoff distances, a more flexible approach to range planning must be developed. An impact area's use is diminished if it does not have tactical air, land, and sea approaches. A complete range capability requires maneuver space to ingress and egress the range proper; tactical approach corridors to training venues such as MOUT and amphibious assault courses; air routes that support maneuverability and evasive actions, and munitions trajectory routes from significant distances away from their points of impact. Appropriate partnering that provides access to these critical spaces beyond range boundaries is needed and will be a significant challenge in the years ahead.

1.3 NAVY

The Navy's updated range assessments for 2015 are included in Chapter 2 of this report.* The discussion in this section highlights key issues and serves as a means to augment the range assessment data.

GENERAL ISSUES RELATED TO RANGE CAPABILITY AND ENCROACHMENT

The Navy's operational focus is deployed and forward presence of warfighting capabilities. The Navy's foremost fiscal priorities for acquisition and O&M resources are aligned with those priorities. Because of the current fiscal environment, requirements are under increased scrutiny and difficult choices must be made to deliver a complete Navy program. Along the spectrum of risk, training range capabilities have been assigned a relatively higher level of funding risk among the multitude of readiness enablers. However, ranges are being funded at the level necessary to support operational readiness qualifications.

CRITICAL ISSUES: RANGE CAPABILITIES

The previously mentioned fiscal environment affects every Navy priority and can limit the Navy's ability to sustain presence, operate shore infrastructure, and sustain training range capability; therefore, any given SRR assessment of "Red" in Chapter 2 of this report for a mission area against a capability or encroachment attribute does not mandate resources be applied to remedy the issue. In some cases the remedy is either too costly or impossible to implement due to factors at a given range complex that are beyond the Navy's control. In other cases, the range capability exists in another complex considered available and adequate to meet training demand. In accordance with the Chief of Naval Operations'

* *Beginning in 2015, the Navy added one additional mission area – Expeditionary Warfare. This is defined as operations conducted by maritime forces in the littoral, riparian, or coastal environment..*

Navigation Plan, the Navy prioritizes resources for programs such as force structure acquisition, platform readiness, steaming days, and flying hours accounts to achieve the tenets of "Warfighting First, Operate Forward, and Be Ready." When the Navy budget is submitted, it represents the best application of limited resources as well as ranges' readiness to operate.

Two issues pose the greatest effect on Navy range capabilities. The first is insufficient training space imposed by both legacy restricted airspace and the weapon impact area at Fallon Range Training Complex (FRTC). The second is the degradation of undersea Time Space Position Information instrumentation at the Pacific Missile Range Facility.

Restrictive Airspace and Impact Area Size

Training requirements for Strike Warfare tactics driven by emerging real-world threats, as well as longer range stand-off PGM with substantially larger release envelopes, have outgrown the available training space at all Navy air-to-ground training ranges and especially at the FRTC at Naval Strike and Air Warfare Center (NSAWC) Fallon, Nevada.

The Navy's Range Air Installation Compatible Use Zone (RAICUZ) program analysis, using the multi-service Weapon Danger Zone (WDZ) analytical tool, has identified critical capability gaps in aviation and special warfare land training. The gaps are in allowable air-to-ground weapon release ranges limited by inadequate restricted airspace volume and in tactical realism and the limited ground acreage available for WDZ potential impact areas. These range capability gaps restrict Fallon's current tactical weapon training employment to 30 to 40 percent of advanced weapons' employment capability. The inability to train to designed weapon release envelopes inhibits available tactics used in training and reduces Carrier Air Wing combat readiness.

Additional SUA volume is required to accommodate employment of the latest weapons and improved tactics. Increased restricted or limited access ground surface area is required to ensure public safety with expanded WDZs (potential impact area) resulting from tactically realistic weapon release profiles. NSAWC has developed a solution to these land and airspace shortfalls and a Plan of Actions & Milestones to begin execution has been approved by Commander, U.S. Fleet Forces Command and Commander, U.S. Pacific Fleet.

Ocean Systems – Underwater TSPI Instrumentation

The proven value of TSPI instrumentation in providing anti-submarine warfare (ASW) training event ground truth and tactical feedback to operators is being put at risk by an aging legacy system and by a lack of portable instrumentation required to train Forward Deployed Naval Forces (FDNF). Air, surface, and submarine warfare areas are being impacted.

The Hawaii Range Complex's permanent IS designated Barking Sands Tactical Underwater Range (BARSTUR) is operating beyond its expected service life. Accumulated wear and tear on trunk cables running through and beyond the surf zone has damaged connectivity between deep water hydrophones and the Pacific Missile Range Facility (PMRF) range control spaces. Range coverage area is being lost. Refurbishment will reestablish range capability and enable ASW training instrumentation coverage in water depths critical to various warfare platform readiness training events.

Portable Underwater Training Range (PUTR) ASW range requirements in the Pacific and U.S. Fleet Forces Command (USFF) areas of responsibility are growing in importance as availability of resources for procurement are shrinking. Both Fleets have requirements to train FDNF that do not have access to permanent underwater instrumentation capability.

SUMMARY OF MAJOR CHANGES IN RANGE CAPABILITY

The Navy noted no major changes in individual range capability for the 2015 SRR; detailed assessments are included in Chapter 2 of this report.

SUMMARY OF EMERGING CAPABILITY ISSUES

Because of the increasing strategic focus on FDNF, the PUTR TSPI capability is becoming more important to the Navy's air, surface, and submarine communities. Adding two additional PUTRs to the Navy inventory will enable expanded coverage of weapons firings in the Mariana Islands, and near Okinawa and Rota, Spain.

FUTURE CAPABILITY OUTLOOK

The Navy expects its range capabilities to continue supporting readiness training for deploying units indefinitely. However, the reality of fiscal trends is that sustaining resources for instrumentation, range operations, and manpower will remain challenging. The long term impact is that ranges' ability to support training events is at risk to incrementally decline over the foreseeable future.

In assessing training range complexes as a whole, encroachment mitigation actions to manage specific encroachment factors are likely to result in either restrictions or limitations on training range capability. Post mitigation training invariably reduces realism, restrains freedom of operational maneuver, or in some cases weapon system or platform use in training, thereby reducing the value of live training.

CRITICAL ISSUES: ENCROACHMENT

Critical issues from the 2014 SRR remain, including alternative energy development of wind farms; foreign investment in the United States; proliferation of ocean observing systems (OOS); and candidate species management. In addition, the competition for frequency spectrum use has now moved from a range capability issue to an encroachment concern. The emerging issue of geothermal energy development also continues to be a concern.

The Navy has continued developing guidance for conducting risk assessments to identify mission critical areas that may be susceptible to encroachment by foreign investment. The purpose of this guidance will be to identify appropriate mitigations for at-risk locations. This guidance does not override any existing security processes; rather it will be an internal planning tool that will help focus Navy efforts. The purpose of this process will be to identify appropriate mitigations for at-risk locations. This guidance does not override any existing security processes; rather it will be an internal planning tool that will help focus Navy efforts.

Seaspace encroachment due to port access routing has been taken off of the critical issues list due to changes in priorities by the Virginia Port Authority, which has caused this issue to go dormant over the past year. This issue will be a concern for future Navy operations because it involves the realignment of a surface danger zone where the Navy conducts live weapons firing.

Alternative and Conventional Energy Development

Alternative energy development creates multiple encroachment issues such as obstruction concerns related to height of wind turbines and/or associated infrastructure (power/transmission lines) and glint and glare concerns caused by solar panels. Conventional energy development, such as offshore energy and oil/gas development, can interfere with at-sea training by placing obstacles in areas where they impede ship freedom to move as needed to launch and recover aircraft. Infrastructure related to geothermal development can lead to training concerns by placing obstacles, and obstructions such as steam, dust, and artificial infrared signals in paths of aircraft and maneuvering ground forces.

The Navy is working to mitigate the effects of conventional and renewable energy exploration and exploitation. In the case of offshore wind, oil, and gas energy project proposals, close coordination with the Under Secretary of Defense for Personnel and Readiness (USD(P&R)) and the Bureau of Ocean Energy Management (BOEM), as well as individual state offshore renewable energy task forces, continue to pay dividends in establishing compatibility between range training requirements and energy interests.

The Navy continues to negotiate and reach agreements with developers near NAS Kingsville and NAS Corpus Christi that allow both the developers to continue project development and the Navy to maintain its mission. Mitigation of the effects to readiness may not always be possible. For example, the Deputy Secretary of Defense determined on October 30, 2014 that the proposed Wind Project at Patuxent River would unacceptably impair or degrade the capability of the DoD to conduct RDT&E and to maintain military readiness, and would ultimately place the armed forces at greater risk when they go in harm's way.

Foreign Investment in the United States

Foreign acquisition of resources or land assets in the vicinity of Navy ranges presents significant encroachment and range capability issues. Any foreign investment near a critical training asset provides an opportunity for persistent visual and electronic observation of T&E events and TTP training. Existing statutory mechanisms do not cover all categories of proposed transactions or projects having the potential to result in adverse impacts to military readiness and national security.

Proliferation of Ocean Observing Systems

OOS are increasing for marine mammal and weather research, climate research, tsunami warning/verification, and seismic/earthquake monitoring. The littoral nature of Navy training ranges and the unique activities that occur there make the ranges valuable for data gathering in each of those categories. The open nature of the high seas makes it possible for data to be gathered under innocent circumstances, but ultimately be exploited as an operational vulnerability.

Where Navy range complexes are encroached by OOS, Navy and national security interests are negatively impacted. The three training ranges of immediate

concern are (1) the Northwest Training Range Complex, (2) the Southern California Offshore Range Complex (SOCAL), and (3) the Hawaii Range Complex. In the future, the East Coast Shallow Water Training Range will be vulnerable to the same challenges.

The Navy created an OOS Situational Awareness Office (SAO) to improve knowledge about systems entering the water. Through these efforts, the Navy will continue cooperation and consultation with civilian agencies, foreign navies, academic institutions, and industry to build on current agreements and allow for additional negotiated agreements as appropriate on the placement of sensors and shared data management.

Candidate Species Management

In FY2013, the Navy entered into an ESA "conference" pursuant to Section 7(a)(4) for the Washington ground squirrel with the U.S. Fish and Wildlife Service (USFWS) to lessen or obviate future impacts to military readiness activities proposed for the Navy's Boardman Range in Oregon should the species ultimately become listed under the ESA. While not currently protected by the ESA, the Washington ground squirrel has been identified by the USFWS as a candidate for listing. The Washington ground squirrel has been added to the USFWS's Multiple District Litigation Plan (MDLP) to address the listing needs of many candidate species as part of a court-ordered settlement agreement. Some of the best remaining habitat of the squirrel is located on the Navy's Boardman range, and non-governmental organizations (NGOs) expressed concerns that any increase in ground-disturbing activities on the range will cause adverse effects to the squirrel. The Navy's conference with the USFWS on this candidate species is a unique approach to ensuring all conservation needs for this species are identified early so the Navy has prior knowledge of actions to lessen impacts on training should the species ultimately be listed. The MDLP target date for a proposed listing determination is February 2015.

Frequency Spectrum Encroachment

The Navy faces challenges related to frequency spectrum on multiple fronts. The National Broadband Plan seeks to reallocate spectrum for commercial uses, potentially impacting frequencies used by the military for training and testing. Additionally, individual projects have the potential to affect activities or equipment sensitive to interference or represent a physical obstruction that interferes with existing transmissions.

SUMMARY OF MAJOR CHANGES IN ENCROACHMENT LIMITATIONS

The Navy noted no major changes in encroachment factor impacts on individual ranges for the 2015 SRR. However, pressures related to presence of threatened and endangered species, munitions restrictions, frequency spectrum encroachment, airspace restrictions, and adjacent land use continue and are expected to continue into the future.

SUMMARY OF EMERGING ENCROACHMENT ISSUES

Climate Change

The Navy is approaching the climate change challenge by conducting vulnerability assessments, and identifying existing planning processes that can potentially be modified to include adaptation to climate change effects. These assessments will identify risks to infrastructure, range space, and range capabilities due to future sea level rise and other climate change effects. As scientific data trends are identified, processes will be refined to evaluate additional impacts and mitigation to sustain operational readiness.

NAVY SPECIAL INTEREST SECTION

The Navy and National Marine Fisheries Service (NMFS) have developed science-based protective and mitigation measures that adequately protect marine species while accommodating military readiness activities. The Navy continues to work with NMFS and other stakeholders to allow at-sea training while minimizing adverse impacts to marine mammals. Endangered species/critical habitat encroachment from the North Atlantic right whale has created avoidance areas that have resulted in some reduced training days and certain training event exclusions. This area is relatively small in scope; however, if these types of restrictions were applied to other species and areas, there could be significant effects on readiness through reduction in range access, segmentation of training/reduction in realism, limits on the application of new technologies, raised flight altitudes, reduced live fire proficiency, increased personnel tempo, and increased O&M costs.

The Navy will continue to invest in marine mammal research; rely on scientifically valid empirical data

results as the basis of marine mammal mitigation development; factor mitigation effectiveness into permit requests; and continue education of Fleet units to adhere to the maritime protective and mitigation measures and public education outreach efforts. The Navy's authorizations under the MMPA and ESA include an adaptive management approach to continually evaluate existing mitigation measures for their potential impacts on training. If impacts on training from mitigation measures are identified and documented, the Navy will raise these impacts with NMFS for resolution during an annual adaptive management review process.

1.4 AIR FORCE

The Air Force's updated range assessments for 2015 are included in Chapter 2 of this report. The discussion in this section highlights key issues and serves as a means to augment the range assessment data.

GENERAL ISSUES RELATED TO RANGE CAPABILITY AND ENCROACHMENT

The Air Force's focus for 2015 is on areas critical to ensuring the viability of Air Force range infrastructure including posturing for the new Defense Strategy and enhancing capabilities to support 5th generation aircraft and associated weapons.

CRITICAL ISSUES: RANGE CAPABILITIES

Posturing for the New Defense Strategy

Constructing a training environment that adequately represents a technologically advanced adversary is a costly endeavor. The Air Force, therefore, cannot afford to invest in this level of infrastructure at all of its training ranges. Instead, the Air Force must focus investment in live infrastructure at a few select ranges that will become hubs for intermediate to advanced training. The first of these ranges is the Nevada Test and Training Range (NTTR). The Air Force Warfare Center is developing a strategic plan to guide investment in capabilities to allow the NTTR to more accurately replicate current threat environments of the new defense posture.

The Air Force is supporting these efforts through collaboration with DoD and the DON to develop and field the Advanced Radar Threat System version 1 (ARTS1) and ARTS version 2 (ARTS2). These systems provide a more realistic training environment because they will close the gap between current and required threat simulation capabilities.

Enhancing Capabilities to Support 5th Generation Aircraft and Associated Weapons

The Air Force's ability to provide a live test and training environment for 5th generation aircraft and advanced sensors requires costly infrastructure and, in some cases, greater area of land and volume of airspace than legacy systems. The methods of providing a 5th generation test and training environment are similar to the methods of posturing for the new defense strategy, allowing the Air Force to meet both needs simultaneously. As a result, the ranges improved to meet the demands of the new defense posture will also be tailored to meet the demands of 5th generation training.

As stated earlier, the Air Force intends to invest in NTTR and the ARTS program, which will provide a suitable environment for live-training and tactics development. Realistically replicating a technologically advanced adversary in a live environment, however, is costly and will depend upon investments in constructive and virtual capabilities to fill the gaps.

SUMMARY OF MAJOR CHANGES IN RANGE CAPABILITY

The Air Force noted no major changes in individual range capability for the 2015 SRR; detailed assessments are included in Chapter 2 of this report.

FUTURE CAPABILITY OUTLOOK

In addition to the critical issues addressed above, the ability to test and train with longer range standoff weapons is an emerging concern. Weapons with increased employment range provide a greater operational capability and element of safety for air crews. As the distance for employment increases, it exceeds the ability of most ranges to contain the weapon. This drives training and test events to a few large ranges, thus stressing their capacity. As the employment distance increases in the future, even these large ranges will be unable to accommodate certain training and test events.

The Air Force is at a crossroads with regard to training infrastructure. A robust virtual and constructive environment will be essential to exercise those mission sets that would be susceptible to intelligence gathering in a live environment. These capabilities will allow aircrews to conduct complex training. The Air Force will explore opportunities to increase live and synthetic training with partner nations as it fields the F-35. This will include exploring synergies in initial training as well as long-term training constructs to maximize range utilization.

CRITICAL ISSUES: ENCROACHMENT

The competing national priorities of increased energy development, nationwide broadband, and a strong defense often manifest themselves on Air Force ranges. The geographic boundaries of these ranges were defined decades ago and designed to place hazardous activity in locations with little impact to the general populace. As the U.S. continues to implement new energy technologies, once isolated training and test ranges are often in the midst of prime development areas for renewable energy and urban growth. The traits that make them ideally suited for Air Force training and testing are also valued by solar and wind energy developers. The resulting development outside of range boundaries can degrade the capability to effectively train and test inside the range boundaries. This is particularly evident when the Doppler Effect from wind turbines located outside of the range boundary degrades critical capabilities and affects the accuracy and reliability of radar systems used on the range.

A rapidly growing challenge on ranges is the increased competition for frequency spectrum—particularly the high demand for broadband access to once reserved military spectrum. Air Force ranges and weapon systems are equipped with a vast array of advanced electronic equipment that relies on the availability of specific, pristine frequency bands for telemetric test data, real-time monitoring of training, quality and timely debrief, digital communication between airborne assets and ground stations, and TTP development. Some of these systems are assigned to frequencies located in bands currently under consideration for auction to commercial entities, potentially impacting training and testing capability.

SUMMARY OF MAJOR CHANGES IN ENCROACHMENT LIMITATIONS

The Air Force noted no major changes in encroachment factor impacts on individual ranges for 2015; detailed assessments are included in Chapter 2 of this report.

SUMMARY OF EMERGING ENCROACHMENT ISSUES

An emerging encroachment challenge is the increasing presence of foreign business interests in the vicinity of Air Force training and test ranges. When foreign companies build or acquire energy and mining projects near Air Force ranges, they gain the ability to maintain a permanent presence near areas vital to national security and potential access to collect critical and sensitive information regarding national defense programs. The Air Force is active in the Committee on Foreign Investment in the U.S. (CFIUS) process to evaluate the security risks of foreign investment in projects near training and test ranges. While there are inherent limitations with CFIUS in terms of scope and coverage, the process provides an opportunity for the Military Services to assess and mitigate potential impacts for covered transactions. It should be noted that the Military Services' review of the potential security implications of any foreign company investment can only be given in terms of risks (likelihood and consequence) to training and activities; actual impacts are not predictable.

FUTURE ENCROACHMENT OUTLOOK

The Air Force does not have the direct ability to make an independent determination on the outcome of any potentially incompatible development project off of Air Force property, and therefore, relies on other government agencies with regulatory authority.

The Air Force is proactively engaged with the Office of the Secretary of Defense (OSD), other Military Services, interagency partners, and industry to address the demands of compatible development. Through the DoD Siting Clearinghouse, the Air Force responds to renewable energy development proposals, works with developers to mitigate any operational impacts, and appeals to agencies with regulatory authority for objections to projects when mitigation is not possible. Additionally, each Air Force installation is tasked to develop an Installation Complex Encroachment Management Action Plan (ICEMAP). Through these plans, units identify specific engagement actions needed to address potential encroachment issues including land development, electromagnetic interference, and protection of classified information.

2 MILITARY SERVICE RANGE ASSESSMENTS

NDAA Section 366(a)(2)(B) requires DoD to evaluate the adequacy of current range resources. Additionally, NDAA Sections 366(c)(1)(B) and (C) require DoD to identify training capabilities and existing constraints. In response, DoD has developed an assessment process to evaluate the adequacy of ranges to provide the required training support and the current impacts of encroachment in terms of risk to the assigned training missions conducted at each range.

In 2007, DoD began assessing the adequacy of ranges to support required training as well as the actual impacts of encroachment. In 2008, DoD and the Military Services worked together to build a common set of capability attributes, encroachment factors, and standard evaluation criteria for the purposes of this report. Use of common attributes, factors, and standard evaluation criteria led to a consistent assessment and analysis across the Military Services. The 2012 SRR contains greater detail on the methodology for the range assessment process. The 2015 updated range assessments are included for each Military Service in this chapter.

2.1 ASSESSMENT METHODOLOGY AND EXAMPLES

DoD has continued to improve its methodology for assessing range capabilities and encroachment. DoD uses 13 common capability attributes and 12 common encroachment factors to create a unified reporting and analytical framework that integrates data from each of the Military Services. The Military Services have been responsible for providing data on capability and encroachment on an annual basis.

2.1.1 CAPABILITY ASSESSMENT

Beginning in 2008, the Military Services developed and identified the following 13 common capability attributes for the range assessment and reporting processes:

- **Landspace**—Physical land area that has the necessary features, such as topography, vegetative cover, configuration, proximity, capacity, usability, and acreage.
- **Airspace**—Physical volume of airspace that has the necessary features, such as types of use, configuration, proximity, capacity, and amount.
- **Seaspace**—Physical sea-surface area that has the necessary features, such as types of use, configuration, proximity, capacity, and amount.
- **Underseaspace**—Physical volume of underseaspace that has the necessary features, such as ocean bottom type, depth, types of use, configuration, proximity, capacity, and amount.
- **Targets**—Various land, air, sea, and undersea presentations designed for live or simulated weapons engagement.
- **Threats**—Various physical and simulated threat presentations, such as emitters, opposing adversary forces, and battlefield effect simulators.
- **Scoring & Feedback Systems**—Equipment that provides information for training event reconstruction, debriefing, and replay, whether virtual or live, through the collection and storage of time and space position information (TSPI), weapons accuracy, systems and operator accuracy, assessment and monitoring of operator performance, and command, control, communications, computers and intelligence (C4I) network information flow.
- **Infrastructure**—Buildings, structures or linear structures (e.g. roads, rail lines, pipelines, fences, pavement).
- **Range Support**—Personnel, software, and hardware that support such functions as daily range operations, maintenance (including range clearance), and communication networks for

Command and Control, scheduling, and range safety. Communications networks include: inter- and intra-range systems; point-to-point; range support networks; fiber optic and microwave backbones; information protection systems (e.g., encryption, radio, data link); and instrumentation frequency management systems.

- **Small Arms Ranges**—Ranges that accommodate weapons systems firing rounds up through 40mm and produce duds.
- **Collective Ranges**—Ranges that provide proficiency at the team or unit level for battlefield operations.
- **Military Operations in Urban Terrain (MOUT) Facilities**—Terrain complexes that replicate urban environments.
- **Suite of Ranges**—A nominal make-up of range attributes, intended to provide the baseline requirement for each level of training. The elements include various types of ranges such as maneuver/training area, impact areas, live fire ranges, aviation ranges, and MOUT complexes that must be coordinated to conduct required training events.

The Military Services assessed and evaluated their specific mission areas against these 13 capability attributes for accessibility and usability during normal operations using the following color rating scheme:

- **Red**—The range is not mission capable. It is unable to support required training tasks for a given mission area to prescribed doctrinal standards and conditions.
- **Yellow**—The range is partially mission capable. It can partially support required training tasks for a given mission area to prescribed doctrinal standards and conditions, resulting in marginalized training for the range users.
- **Green**—The range is fully mission capable. It can support required training tasks for a given mission area to prescribed doctrinal standards and conditions.
- **White (Blank)**—White (blank) represents a situation where an assessment for a given mission area is not performed against a particular attribute. If a complete mission area is "white," there is no requirement for the range to provide training in this area. When conducting the encroachment assessment for this same range, no encroachment factors will be assessed for this mission area.

2.1.2 ENCROACHMENT ASSESSMENT

Measuring the impact of encroachment on mission readiness can be difficult. Encroachment causes range users to find workarounds to complete required training. While some adaptation by the Military Services' operational forces can be expected, excessive workarounds resulting from encroachment can increase mission risk due to unrealistic, segmented, or irrelevant training, and may result in a deterioration of training content and/or quality. Therefore, as part of DoD's efforts to standardize the assessment of encroachment on training ranges, the Military Services were tasked to assess the current impacts of the following 12 encroachment factors against their Military Service mission areas.

- **Threatened & Endangered Species**—Constraints placed on training due to regulatory requirements and/or Military Service guidance to manage at-risk, threatened, or endangered species or associated habitat.
- **Munitions Restrictions**—Constraints placed on training due to regulatory requirements and/or Military Service guidance on munitions use, munitions constituents, or residue, to include range clearance (Restrictions placed on munitions use due to weapon safety footprint requirements are assessed as capability attributes under Landspace, Airspace, Seaspace, and Underseaspace. Other constraints from munitions use that have an encroachment factor available, such as Noise, Air Quality, Water Quality, and Transients, are assessed under those factors).
- **Spectrum**—Constraints placed on training due to unavailability of or interference with required electromagnetic spectrum.
- **Maritime Sustainability**—Constraints placed on training due to regulatory requirements and/or Military Service guidance to protect and sustain the maritime environment, including due to marine mammals and sonar issues.
- **Airspace**—Constraints placed on training due to the availability of airspace (these constraints may be spatial or temporal).
- **Air Quality**—Constraints placed on training due to regulatory requirements and/or Military Service guidance to maintain air quality (This includes any restrictions placed on prescribed burning).
- **Noise Restrictions**—Constraints placed on training as a result of mitigation measures for unwanted sound generated from the operations of military

weapons or weapon systems that affect people, animals (domestic or wild), or structures on or in proximity to military training areas (Noise restrictions do not include occupational noise exposure or underwater sound).

- **Adjacent Land Use**—Constraints placed on training due to incompatible development in proximity to military training areas.
- **Cultural Resources**—Constraints placed on training due to legal and/or regulatory requirements and/or Military Service guidance to manage and maintain cultural resources.
- **Water Quality/Supply**—Constraints placed on training due to legal and/or regulatory requirements and/or Military Service guidance to manage water quality and supply.
- **Wetlands**—Constraints placed on training due to legal and/or regulatory requirements and/or Military Service guidance to manage wetlands.
- **Range Transients**—Constraints placed on training due to the unannounced or unauthorized presence of individuals, livestock, aircraft, or watercraft transiting range.

The Military Services assessed the impact from each of these factors on their range and range complexes' capabilities to support assigned training missions. The assessments were based on range availability and use using the following color rating scale:

- **Red**—The encroachment factor has a severe effect or poses a high risk to the range's ability to support its assigned mission training and would likely cause the training mission to fail. Mitigating the encroachment would involve prohibitive costs or actions for the range.
- **Yellow**—The encroachment factor has a moderate impact or poses a medium risk on the range's ability to support its assigned mission training. Workarounds have a moderate impact on training content, procedure, or outcome. Addressing the encroachment results in additional burdens or requires additional actions by the range to mitigate the impact of the encroachment.
- **Green**—The encroachment factor has minimal impact or poses a low risk on the range's ability to support its assigned mission training. Workarounds detract minimally or not at all from training content, procedure, or outcome. Costs are not incurred by the range or range users to address the encroachment factor.
- **White (Blank)**—An encroachment factor does not exist for a given mission area.

2.1.3 EXPLANATION OF INDIVIDUAL RANGE ASSESSMENT DETAILS AND OBSERVATIONS

Each Military Service's individual ranges/range complexes were assessed for its ability to support assigned training missions using the 13 common capability attributes and 12 common encroachment factors using the red, yellow, and green rating scales discussed above. An explanation for how to read and interpret these charts is discussed further below. Major elements of each presentation, in the order in which they appear, are as follows:

- Pie charts depicting the overall distribution of red, yellow, and green ratings are presented with calculated rating scores on a scale of 0 to 10. The overall rating scores for both capability and encroachment assessments are weighted average scores with 0 assigned for each red rating, 5 for each yellow rating, and 10 for each green rating.
- Summary Observations, located below the charts and scores, provide information on what encroachment factors and capability attributes are most impacting each range's ability to perform its assigned mission, along with those mission areas most severely impacted.
- Historical Information, Results, and Future Projections provides a more qualitative assessment with several pieces of information. Overall rating scores from prior years are presented along with comments as to whether the range complex's capabilities or encroachment pressures have been improving or degrading over the years and the outlook for the future.
- Detailed Comments for each range grouped by capability observations and encroachment observations. These observations describe the red and yellow assessment ratings, explaining the problem or shortfall, the impacts to training activities, and any planned remedial actions.

2.2 ASSESSMENT RESULTS AND DISCUSSION

The following sections represent the result from each Military Service's range assessments.

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2.2.1 ARMY RANGE ASSESSMENTS

Table 2-1 Army Capability Assessment Data Summary

Range	NMC	PMC	FMC	Capability Scores
Fort Benning	6	24	30	7.00
Fort Bliss	0	3	45	9.69
Fort Bragg/ Camp Mackall	0	22	31	7.92
Fort Campbell	0	9	33	8.93
Fort Carson & Pinon Canyon Manuever Site	0	4	36	9.50
Fort Drum	0	3	38	9.63
Hawaii	0	7	34	9.15
Fort Hood	0	3	58	9.75
Fort Irwin	2	17	45	8.36
Joint Base Lewis-McChord	6	5	44	8.45
Fort Polk	0	5	38	9.42
Fort Riley	0	7	51	9.40
Fort Stewart	11	2	30	7.21
Fort Wainwright	0	6	46	9.42
Yakima Training Center	6	8	41	8.18
HQ Army	**31**	**125**	**600**	**8.76**

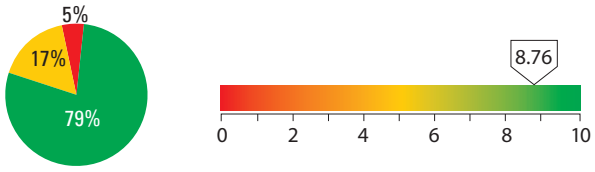
Table 2-2 Army Encroachment Assessment Data Summary

Range	Severe	Moderate	Minimal	Encroachment Scores
Fort Benning	1	16	10	6.67
Fort Bliss	0	7	39	9.24
Fort Bragg/ Camp Mackall	0	11	40	8.92
Fort Campbell	0	1	40	9.88
Fort Carson & Pinon Canyon Manuever Site	0	2	49	9.80
Fort Drum	0	0	39	10.00
Hawaii	0	15	36	8.53
Fort Hood	0	1	47	9.90
Fort Irwin	1	8	54	9.21
Joint Base Lewis-McChord	0	4	62	9.70
Fort Polk	1	2	39	9.52
Fort Riley	0	2	64	9.85
Fort Stewart	0	20	46	8.48
Fort Wainwright	0	5	43	9.48
Yakima Training Center	0	4	62	9.70
HQ Army	**3**	**98**	**670**	**9.33**

Of the 508 ranges identified in the Army's range inventory in Appendix A, there are a total of 102 that are resourced and fall under the Army's Sustainable Range Program. These 102 ranges comprise three tiers that were established using mission value, to include unit stationing, institutional schools/other mission support, land asset size, and level of training (individual, crew, collective). Training sites that are not part of the 102 supported sites are typically small, individual training ranges managed through local Army National Guard (ARNG)/state agreements and policies. The Army only maintains inventory level data for these sites. Although the Army continually evaluates all ranges, only the 21 ranges that represent Tier I sites are included in the assessments due to the impracticality of compiling the information for every range. There are seven ranges inventoried separately in Hawaii that are grouped together for the assessment because they represent a single training complex for management purposes. The Tier I ranges represent 88 percent of the training load on Army active duty ranges.

Figure 2-1 **Army** Capability Chart and Scores

2015



Summary Observations

Army's overall capability score decreased from 9.17 in 2012 to 8.76 in 2015

- Army's Fully Mission Capable (FMC) assessments (green) decreased from 84% to 79%
- Partially Mission Capable (PMC) assessments (yellow) increased from 16% to 17%
- Not Mission Capable (NMC) assessments (red) increased from 0.2% to 5%

Historical Information, Results, and Future Projections

Calendar Year	2008	2009	2010	2011	2012
Capability Scores	6.49	6.49	7.61	8.97	9.17

The top three capability attributes with the greatest number of red and yellow assessments are (Figure 2-5):

- Range Support (24+21)
- Collective Range (4+16)
- Small Arms Range (1+19)

The top three mission areas with the greatest number of red and yellow assessments are (Figure 2-7):

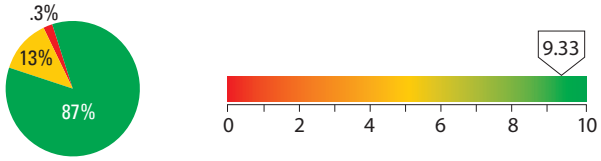
- Movement and Maneuver (6+51)
- Fire Support (7+27)
- Sustainment (5+20)

Army range capabilities in the future must support the operating force (Contingency Expeditionary Force [CEF] strategy, Unified Land Operations training). The Army is in a transition period to a 1:2 (AC)/1:4(RC) BOD/Dwell near term, with a vision to achieve a 1:3/1:5 in the outyears, while moving to more CEFs than Deployable Expeditionary Forces (DEFs). This will require more home station range capabilities than the Army has seen over the last seven years. The level of Training Support Systems (TSS) funding needs to be balanced between products, services, facilities, sustainment, and management. Funding levels need to be consistent with critical requirements to address Commanders' needs in the operational and institutional training domains. (See Army update in Chapter 1 for more details).

Refer to the Army's 15 individual range assessments for comments and additional information (Figure 2-9).

Figure 2-2 **Army** Encroachment Chart and Scores

2015



Summary Observations

Army's overall encroachment score increased from 9.19 in 2012 to 9.33 in 2015

- Army's minimal risk assessments (green) increased from 84% to 87%
- Moderate risk assessments (yellow) decreased from 16% to 13%
- Severe risk assessments (red) remained unchanged as 0.3%

Historical Information, Results, and Future Projections

Calendar Year	2008	2009	2010	2011	2012
Encroachment Scores	9.23	9.23	9.22	9.19	9.19

The three Encroachment Factors with maximum number of red and yellow assessment are (Figure 2-6):

- Threatened & Endangered Species and Critical Habitat (1+19)
- Cultural Resources (0+19)
- Wetlands (0+16)

The top three mission areas with the greatest number of red and yellow assessments are (Figure 2-8):

- Movement & Maneuver (2+27)
- Fire Support (1+26)
- Sustainment (0+16)

Encroachment remains a challenge for the Army. The capacity of and accessibility to Army lands is decreasing while the requirement for training land grows. There are significant challenges that must continue to be addressed to sustain training on Army land. The Army is competing with its neighbors for access to land, airspace, and frequency spectrum. Urbanization and sprawl are encroaching on military lands. Urbanization has concentrated endangered species and their habitats on areas traditionally used for military training. Environmental restrictions tend to translate into reduced accessibility to training land. (See Army update in Chapter 1 for more details).

Refer to the Army's 15 individual range assessments for comments and additional information (Figure 2-9).

Figure 2-3 Army Capability Assessments by Range

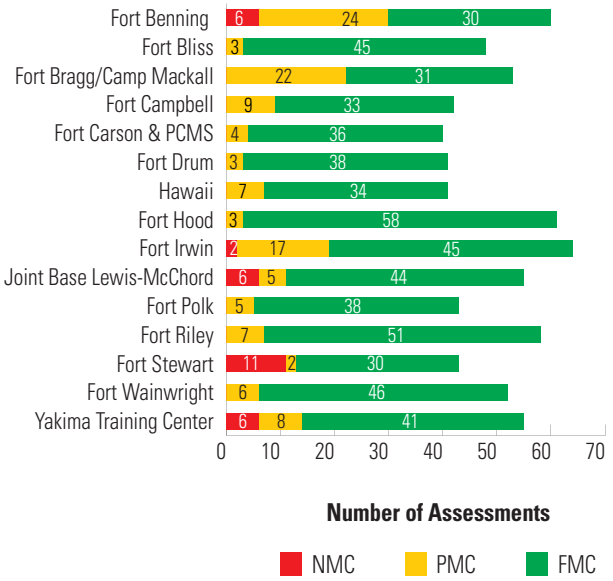


Figure 2-4 Army Encroachment Assessments by Range

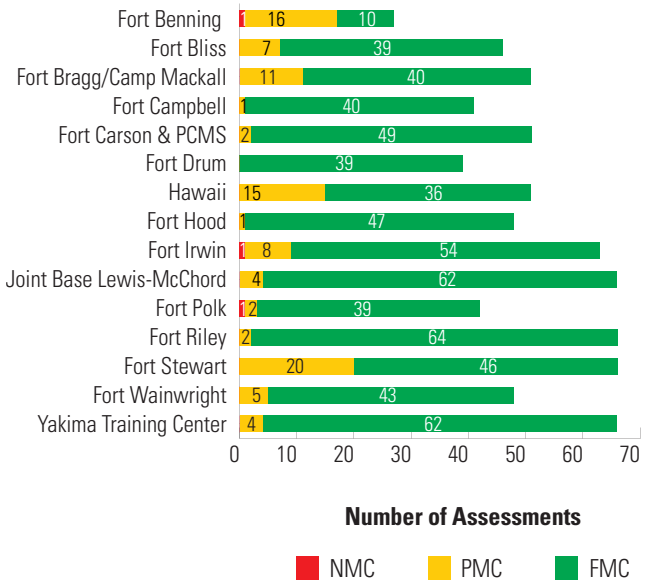


Figure 2-5 Army Capability Assessment by Attributes

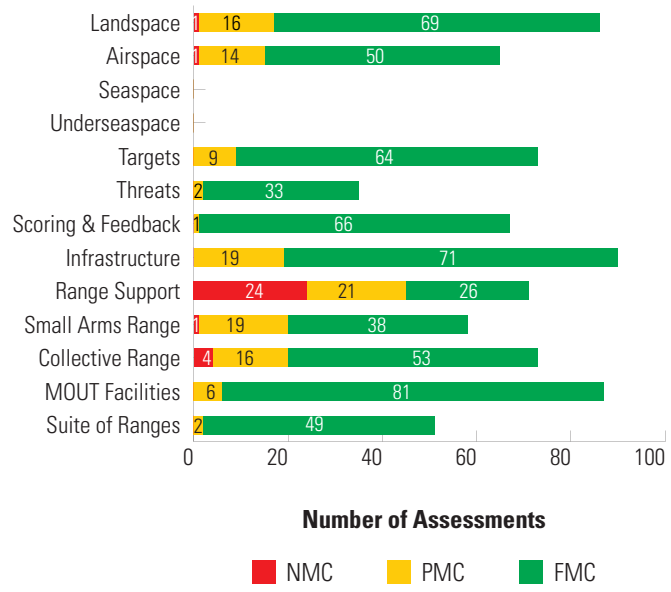


Figure 2-6 Army Encroachment Assessment by Factors

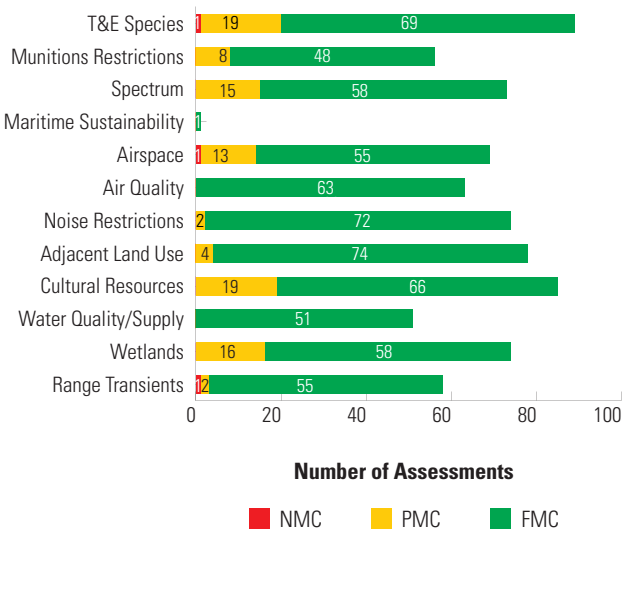


Figure 2-7 Army Capability Assessment by Mission Areas

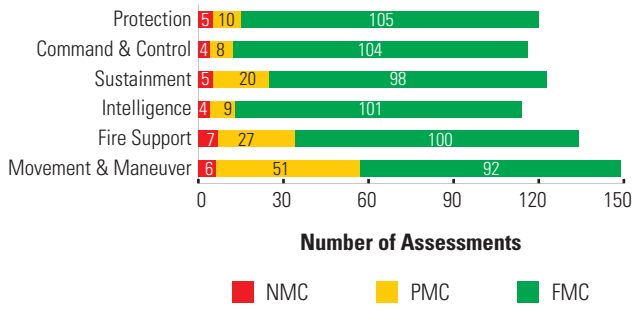


Figure 2-8 Army Encroachment Assessment by Mission Areas

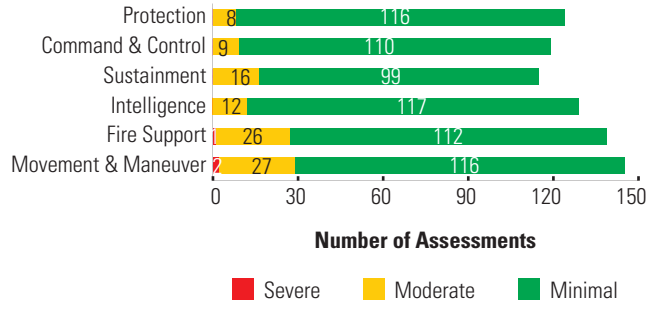


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Figure 2-9 Army Capability and Encroachment Assessment Detail

Fort Benning Assessment Details

Range Mission Description

Fort Benning and the Maneuver Center of Excellence (MCoE) provide trained and adaptive soldiers and leaders for an Army at War, while developing future requirements for the individual soldier and the Maneuver Force, and providing a world class quality of life for our soldiers and Army families. The MCoE Command priorities are to: (1) Fully Support an Army at War; (2) Prepare for the Future; (3) Enhance Quality of Life for soldiers and Army Families; (4) Operate in a Command Climate of Teamwork, Discipline and Standards, and Safety; (5) Fully Transition to the MCoE; and (6) Demonstrate Inspired Leadership.

Capability Data

Mission Areas	Capability Attributes												
	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
Movement & Maneuver	FMC	FMC			PMC	FMC		FMC	NMC	PMC	PMC	PMC	FMC
Fire Support	PMC	FMC			PMC	FMC		PMC	NMC	PMC	PMC	PMC	FMC
Intelligence	FMC	FMC			FMC	FMC		FMC	NMC	PMC	PMC	PMC	FMC
Sustainment	PMC	FMC			FMC	FMC		PMC	NMC	PMC	PMC	PMC	FMC
Command & Control	FMC	FMC			FMC	FMC		FMC	NMC	PMC	PMC	PMC	FMC
Protection	FMC	FMC			FMC	FMC		FMC	NMC	PMC	PMC	PMC	FMC

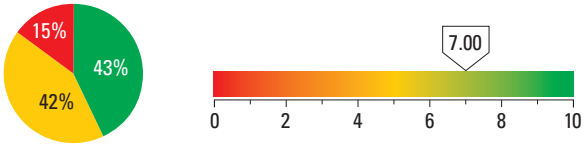
Legend: FMC PMC NMC

Encroachment Data

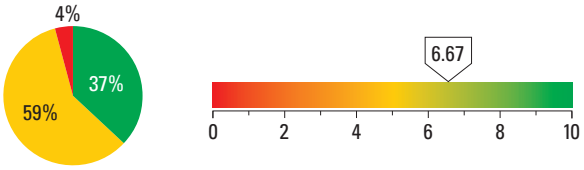
Mission Areas	Encroachment Factors												
	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Movement & Maneuver	Severe					Minimal	Minimal	Moderate	Moderate	Minimal	Moderate	
Fire Support	Moderate					Minimal	Minimal	Moderate	Moderate	Minimal	Moderate	
Intelligence	Moderate							Moderate	Moderate		Moderate	
Sustainment	Moderate					Minimal	Minimal	Moderate	Moderate	Minimal	Moderate	
Command & Control	Minimal											
Protection	Moderate											

Legend: Minimal Moderate Severe

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

Due to lack of maintenance and availability of Training Land funds in the past, some of the installation's training lands have degraded. Absence of vegetation combined with heavy maneuver training on sandy soils has caused wide-spread erosion in designated heavy maneuver training areas and throughout Fort Benning. Funding and support this year have been greater than the previous year, hopefully this trend will continue and will significantly increase the ability to support the Senior Commander's mission. The severe environmental constraints, specifically the RCW, continue to have a detrimental effect on training.

Summary Observations

Due to lack of maintenance and availability of training land funds in the past, some of the installation's training lands have degraded. Absence of vegetation combined with heavy maneuver training on sandy soils has caused wide-spread erosion in designated heavy maneuver training areas and throughout Fort Benning. Funding and support this year have been greater than the previous year, hopefully this trend will continue and will significantly increase the ability to support the Senior Commander's mission. The severe environmental constraints, specifically the Red-Cockaded Woodpecker (RCW), continue to have a detrimental effect on training.

Fort Benning Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	6.33	6.33	7.56	8.41	9.39	**Encroachment Scores**	8.25	8.25	8.72	8.72	8.81
In the BRAC process Ft. Benning gained 23 ranges with no increase in full time government equivalent. The FY2015 Table of Distribution and Allowances (TDA) has further reduced that number by 21. Range maintenance is understaffed which causes deferred maintenance and closure of some firing lanes and increases time required to accomplish training tasks on those ranges affected. Safety patrols are also understaffed which limits inspections to high risk events. Correcting the SAG 121 funding strategy for an authorized contractor labor strategy remains a valid requirement. If funding is not provided for the requested CMEs, Ft. Benning's capability to support its TRADOC, FORSCOM, and SOCOM customers (110 range events daily with 12,000 soldiers) will degrade. This is a year to year issue and so long as funding is provided, Ft. Benning can continue to provide support.						Fort Benning is planning to have a revised and completed INRMP and Endangered Species Management Plans (ESMPs) for the RCW, Gopher Tortoise, Relict Trillium, Wood Stork, American Alligator, Bald Eagle, GA Rockcress, and Shiny Rayed Pocketbook Mussel in 2014. The USFWS and the AL and GA DNRs will be signatory agencies on the INRMP and ESMPs. The RCW ESMP and other ESMPs will undergo formal consultation with USFWS, with no anticipated jeopardy opinions. The RCW ESMP, once approved, will allow Ft. Benning to use the 2007 RCW Army Guidelines. This will for the first time allow the Army to unprotect clusters (removal of the 2 white bands on cavity trees and signage around cavity trees), which will provide greater training flexibility. The GA Rockcress and Shinyrayed Pocketbook Mussel ESMPs will prevent critical habitat designation on Ft. Benning. Over the next 2–5 years, many of the 95 RCW clusters that were designated as "taken" due to Digital Multipurpose Range Complex (DMPRC), BRAC, and Maneuver Center of Excellence (CoE) impacts should again be counted towards Ft. Benning's RCW recovery goal. This will facilitate implementation of the 2007 RCW Army Guidelines which will mean more unprotected clusters and the ability to reach the recovery goal sooner and greater training flexibility. Ft. Benning's ACUB program has expanded and now there are approximately 23,000 acres protected on the eastern and northeastern boundary lines. The USFWS has approved a process to incorporate much of this land into Ft. Benning's baseline RCW acreage and eventually count RCWs on these lands towards Benning's recovery goal. These actions will take some of the pressure off of Ft. Benning to recover the RCW only on training lands and allow future range construction and training area expansion.					

Fort Benning Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Fire Support	●	Restrictions caused by the presence of radiological contaminated areas. This causes severe limits on the ability to engage targets in the locations of those areas. Licensing through the NRC has been requested with no anticipated completion date.
	Sustainment	●	The support facilities on 56 of 81 active ranges were constructed prior to 1960 and no longer meet USACE standards, although they are serviceable. This has a negative impact on first impressions of initial entry soldiers and officers. These facilities will be replaced as SRP funds become available. There is no anticipated completion date.
Targets	Movement & Maneuver	●	Restrictions on firing that impacts habitat for the RCW cause training restrictions on certain target positions only. These restrictions have caused some targets to be disabled. The restrictions are mitigated by earthen berms, in most cases. Some cannot be mitigated and training is limited to targets that do not impact habitat.
	Fire Support	●	Same as above.
Infrastructure	Fire Support	●	Restrictions caused by the presence of radiological contaminated areas. This causes severe limits on the ability to engage targets in the locations of those areas. Licensing through the NRC has been requested with no anticipated completion date.
	Sustainment	●	The support facilities on 56 of 81 active ranges were constructed prior to 1960 and no longer meet USACE standards, although they are serviceable. This has a negative impact on first impressions of initial entry soldiers and officers. These facilities will be replaced as SRP funds become available. There is no anticipated completion date.

Figure 2-9 Army Capability and Encroachment Assessment Detail (continued)

Fort Benning Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Range Support	Movement & Maneuver	🔴	In the BRAC process Fort Benning gained 23 ranges with no increase in FTGE. The FY2015 TDA has further reduced that number by 21. Range maintenance is understaffed which causes deferred maintenance and closure of some firing lanes and increases time required to accomplish training task on those ranges affected. Safety patrols are also understaffed which limits inspections to high risk events. Correcting the SAG 121 funding strategy for an authorized contractor labor strategy remains a valid requirement. If funding is not provided for the requested CMEs, Ft. Benning's capability to support its TRADOC, FORSCOM and SOCOM customers (110 range events daily with 12,000 soldiers training) will degrade. This is a year to year issue and so long as funding is provided, Ft. Benning can continue to provide support.
	Fire Support	🔴	Same as above.
	Intelligence	🔴	Same as above.
	Sustainment	🔴	Same as above.
	Command Control	🔴	Same as above.
	Protection	🔴	Same as above.
Small Arms Ranges	Movement & Maneuver	🟡	Same as above.
	Fire Support	🟡	Same as above.
	Intelligence	🟡	Same as above.
	Sustainment	🟡	Same as above.
	Command Control	🟡	Same as above.
	Protection	🟡	Same as above.
Collective Ranges	Movement & Maneuver	🟡	Same as above.
	Fire Support	🟡	Same as above.
	Intelligence	🟡	Same as above.
	Sustainment	🟡	Same as above.
	Command Control	🟡	Same as above.
	Protection	🟡	Same as above.
MOUT Facilities	Movement & Maneuver	🟡	Same as above.
	Fire Support	🟡	Same as above.
	Intelligence	🟡	Same as above.
	Sustainment	🟡	Same as above.
	Command & Control	🟡	Same as above.
	Protection	🟡	Same as above.

Fort Benning Detailed Comments

Encroachment Observations

Attributes	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Movement & Maneuver	🔴	There are 4 federal threatened and endangered species and 10 state listed species on Fort Benning. Since 1986, RCW issues have affected use of 16 ranges including closure, not being constructed, or reduced capability. The most significant current impacts are closure of Griswold live fire exercise (LFX), impaired capability of Griswold Mission Training Complex (MTC) to do a flanking maneuver, and closure of 4 stationary and 2 mover targets on Hasting's. The biggest current training impact is reduced capability to conduct Platoon Fire and Maneuver Training. The MCoE construction efforts have resulted in a Jeopardy Biological Opinion for the installation. The Army is implementing appropriate mitigation strategies in order to avoid training shortfalls; however, the Army anticipates continued restrictions now that the Maneuver CoE move to Fort Benning is complete. There are 4 federal threatened and endangered species and 10 state listed species on Fort Benning. Since 1986, RCW issues have affected use of 16 ranges including closure, not being constructed, or reduced capability.
	Fire Support	🟡	Same as above.
	Intelligence	🟡	Same as above.
	Sustainment	🟡	Same as above.
	Protection	🟡	Same as above.
Adjacent Land Use	Movement & Maneuver	🟡	Residential and commercial development is increasing along the western and northwestern boundaries of the installation. Live-fire activities increase perceived noise pollution and tracked vehicle movement increases the perceived air pollution and erosion potential to surrounding property. These perceptions minimize the installation's efforts, options, and ability to balance mission requirements and stewardship. The ACUB program proactively addresses encroachment while achieving conservation objectives through the purchase of conservation easements or land from willing owners. The easements prohibit incompatible development in perpetuity, yet they still accommodate low impact uses such as farming and forestry. The Nature Conservancy, Ft. Benning's partner in coordinating habitat conservation planning, has protected about 23,000 acres of buffer primarily along the installation's eastern and northeastern perimeter. The buffer was created through a combination of conservation easements and conservation focused land acquisitions. These actions will lessen the impact of developmental encroachment. It is expected that the issue will remain, however, for the western and northwestern boundaries for the foreseeable future.
	Fire Support	🟡	Same as above.
	Intelligence	🟡	Same as above.
	Sustainment	🟡	Same as above.
Cultural Resources	Movement & Maneuver	🟡	There are 3,974 numbered cultural resource (archeological) sites encompassing 7,448 acres (ac) on post. Of those, 2,576 ac have been identified as eligible for the National Register of Historic Places (NRHP), including 66 ac of Yuchi Town National Historic Landmark. There are 1,283 ac yet to be evaluated for NRHP eligibility, totaling 3,859 ac that are currently restricted from any ground disturbing activity. Of the 3,859 ac restricted acres, it is anticipated that when evaluation is completed, about 42% or 536 ac will be assessed as eligible for the NHRP yielding an estimated total of 3,112 ac restricted from any ground disturbing activity. Training activities are limited on this acreage due to the potential for impacts that may adversely affect sensitive cultural resource sites. This is an ongoing issue; however, integrated planning and management at the installation helps to balance mission training requirements with federal, state, and local environmental compliance laws, restrictions, and regulations. Site evaluations occur as funding becomes available and mitigation through excavation typically makes acreage available as required for mission purposes.
	Fire Support	🟡	Same as above.
	Intelligence	🟡	Same as above.
	Sustainment	🟡	Same as above.
Wetlands	Movement & Maneuver	🟡	There are 16,926 ac of wetlands within the installation boundary that impose training restrictions. Wetland areas are off limits to heavy maneuver training and result in a loss of maneuver training land. Additionally, wetlands require the construction of crossing sites which artificially channel training and hinders realistic maneuver. This is an ongoing issue; however, the Ft. Benning Integrated Training Area Management (ITAM) program is continually working to provide the policy and program guidance to balance mission training requirements with federal, state, and local environmental compliance laws, restrictions, and regulations.
	Fire Support	🟡	Same as above.
	Intelligence	🟡	Same as above.
	Sustainment	🟡	Same as above.

Figure 2-9 Army Capability and Encroachment Assessment Detail (continued)

Fort Bliss Assessment Details

Range Mission Description

Fort Bliss provides major training facilities for the 1st Armored Division, a Joint Mobilization Platform for mobilization, deployment, and demobilization training in support of First Army. It provides support for 32nd Army Air and Missile Defense Command (AAMDC) to include Terminal High Altitude Area Defense (THAAD). Ranges and training areas also support daily air-to ground sorties from Holloman AFB and other regional Air Force Installations. Ranges and training areas support the Brigade Modernization Command with New Imitative Equipment testing and validation. Support also includes rotary wing aviation gunnery and FORSCOM Mandated High Altitude Mountainous Environment Training Strategy (HAMETS), and Special Operations Group Pre-deployment Training. Ranges and training areas further support the Foreign Military Sales cases for the Japanese, Germans, Dutch, Canadians and other exercises at the installation.

Capability Data

Mission Areas	Capability Attributes: Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
Movement & Maneuver	●	●			●	●	●	●	●	●	●	●	
Fire Support	●	●			●	●	●	●	●		●	●	
Intelligence	●	●			●	●		●			●	●	
Sustainment	●				●	●		●	●	●	●	●	
Command & Control	●	●			●		●	●			●	●	
Protection	●				●		●	●		●	●	●	

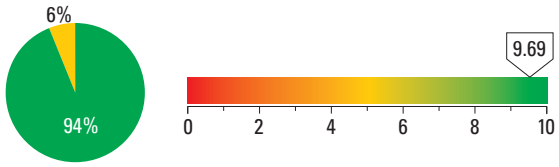
Legend: FMC ● PMC ● NMC ●

Encroachment Data

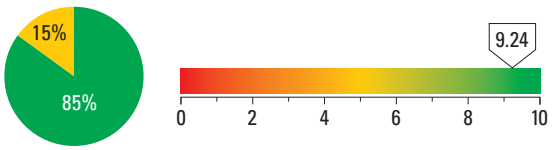
Mission Areas	Encroachment Factors: Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Movement & Maneuver	●		●		●	●	●	●	●			●
Fire Support	●		●		●	●	●	●	●			●
Intelligence	●		●		●	●	●	●	●			●
Sustainment	●		●		●	●	●		●			●
Command & Control	●		●		●	●	●		●			●
Protection	●		●		●	●	●	●	●			●

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

With the completion of two digital multipurpose training ranges and the Digital Multipurpose Range Complex, Fort Bliss has improved the collective range category. In the 4th quarter of FY2014, Ft. Bliss is set to receive the only digital air/ground integration range in the Army which will increase Ft. Bliss' overall collective training capability is support of Combined Arms Live Fire Exercise (CALFEX) gunnery. Due to poor contracted performance in target implementation packages for two scout recce ranges, one multi-purpose machine gun range (MPMG), and one heavy sniper range, the Tank Automotive and Armaments Command (TACOM) sent out another request for proposal. The MPMG range is scheduled to be ready in mid June 2014, and the heavy sniper before FY2015. This has impacted units with the same training requirement by deferring training to ranges with less capability and shortfalls. Oro Grande Base Camp remains the most austere facility with very limited life support capabilities.

Summary Observations

There are minimal impacts to the mission areas due to FAA airspace over the southern training areas. Unit commanders cannot launch "Raven" UAS to track maneuvers due to the flight approach paths of the El Paso International Airport and Biggs Army Airfield. Spectrum interference has a moderate impact on Movement and Maneuver, Sustainment, and Command and Control Missions, due to a reduction in the number of voice channels available for emergency services, range control, and other users. The auction of frequency bands to wireless communications systems has negatively affected UAS operations.

Fort Bliss Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	4.78	4.78	7.33	9.17	9.40	**Encroachment Scores**	10.00	10.00	9.02	9.63	9.63
Fort Bliss has some current capabilities and throughput shortfalls due to continuous and ongoing construction that closed down several ranges. These impacts are continually being addressed and mitigated. Range support has improved with increase in manpower over the last several months enabling increased support to ongoing missions; however without the support of the current personnel range support contracts, manpower would not be sufficient to cover and maintain all the ranges on Fort Bliss.						Encroachment factors have not historically impacted the mission at Fort Bliss. Moderate impacts resulting from FAA airspace, spectrum interference, and cultural resources have developed over time. Theses impacts are being managed and mitigated at the installation level and are improving annually.					

Fort Bliss Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Infrastructure	Movement & Maneuver		Oro Grande Base Camp lacks sufficient facilities to accommodate unit training densities (billets, feeding areas, fire or emergency aid stations). Base camp does not have a motor pool capable of accommodating heavy tracked vehicles. There is no track vehicle crossing areas for easy access to major ranges, units must travel several miles away from the camp to cross over Highway 54 to the Oro Grande range complex.
Range Support	Movement & Maneuver		Current manpower for range support is at 80%. The current optempo for units training is increasing due to mobilization and demobilization and annual AT events. Mission support requirements increased based off deconfliction of ranges and weekend support. Contractor support on major large caliber ranges has reduced some support overall.
	Sustainment		Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Spectrum	Movement & Maneuver		The currently allocated spectrum is approximately 70% of the future operationally required spectrum. Additionally, the frequency spectrum must be shared with Mexico. Interference from Mexico on the UHF band sometimes interferes with the trunked land mobile radio (LMR) system at Fort Bliss. This reduces the number of voice channels available for emergency services, range control, and other users. Recently spectrum has been auctioned off to wireless network companies, negatively affecting UAS operations. The mitigation strategy is to share frequencies and deconflict available spectrum. The DoD Area Frequency Coordinator (AFC) is working to issue single Radio Frequency Authorizations (RFA's) that include frequency assignments for operations at Bliss, White Sands Missile Range, and/or Holloman. All frequencies will be scheduled and deconflicted in the Integrated Frequency Deconfliction System (IFDS) database. Spectrum managers at each installation will submit requests for new permanent frequency assignments as required.
	Sustainment		Same as above.
	Command Control		Same as above.
Airspace	Intelligence		Required training airspace overlaps with Bliss Army Airfield and El Paso International Airport approach paths. Unit commanders cannot train with their internal "Raven" UAS in FAA airspace over the Southern Training Area 1 and 2 series. This affects Intelligence gathering training and the ability to effectively exercise full command and control decision making process in the lower echelon command structures. This training is available north in our vast SUA and is only a minor limitation to units training at Fort Bliss. No immediate mitigation required.
	Command & Control		Same as above.
Cultural Resources	Movement & Maneuver		High density of cultural resources are designated off-limits areas (OLAs). These OLA units protect representative types of significant cultural resources. Two percent of the off-road maneuver space is restricted as OLAs. This protection strategy allows for open maneuver as part of the Programmatic Agreement with the NM and TX State Historic Preservation Offices and the Advisory Council on Historic Properties (ACHP), as designated regulators for federal cultural resource laws.
	Protection		Same as above.

Figure 2-9 Army Capability and Encroachment Assessment Detail (continued)

Fort Bragg/Camp Mackall Assessment Details

Range Mission Description

The primary mission is to support Battalion and below combined arms maneuver, and Company and below live fire maneuver to include Individual specialized live fire training for Army Special Operations Forces (ARSOF), Artillery, Engineer, Calvary and Aviation units. Primary training audiences include over 40,000 soldiers assigned to XVIII Abn Corp, 82d Airborne Division, 1/82 IBCT, 2/82 IBCT, 3/82 IBCT, 18 Fires Bde, 82 Cbt Aviation Bde, 82 Sustainment Bde, 525 Battlefield Surveillance Brigade, 20 Engineer Brigade, 16 Military Police Brigade, 108 Air Defense Artillery Brigade, 3d Special Forces Group, 1st Psyop Gr, 1 Civil Affairs Group and the US Army Special Warfare Center and School.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Movement & Maneuver	●	●			●	●	●	●	●	●	●	●	●
Fire Support	●	●			●	●		●	●	●	●	●	●
Intelligence	●	●						●	●	●	●	●	●
Sustainment	●	●						●	●	●	●	●	●
Command & Control	●	●						●	●	●	●	●	●
Protection	●	●						●	●	●	●	●	●

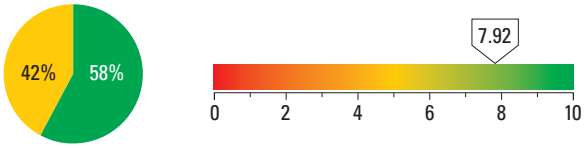
Legend: FMC ● PMC ● NMC ●

Encroachment Data

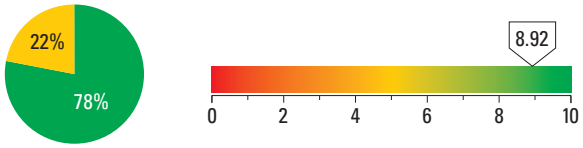
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Movement & Maneuver	●	●	●		●		●	●	●	●	●	
Fire Support	●	●	●		●		●	●	●	●	●	
Intelligence	●	●	●		●		●	●	●		●	
Sustainment	●	●			●			●	●			
Command & Control	●	●	●		●	●	●	●	●	●	●	
Protection	●	●	●		●	●	●	●	●	●	●	

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

The most adverse impact to mission is caused by a shortfall of Training Land, Airspace, and Collective Ranges. While several mission areas are impacted by capability shortfalls, Movement and Maneuver and Sustainment are most severely impacted, due to a training land shortfall, lack of restricted airspace to support UAS training, and a shortfall of an Aerial Gunnery Range.

Summary Observations

Direct impacts to units training by encroachment of threatened and endangered species has improved with the recovery of the RCW. Significant areas of training land have been opened to dismounted maneuver. Encroachment on Army ranges is still affecting the installation's ability to conduct range modernization and restoration. Land restoration and habitat improvement and sustainment through the ACUB continues to improve conditions off the installation and has both a direct and indirect impact on encroachment and endangered species on the installation.

Fort Bragg/Camp Mackall Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	5.33	5.33	8.00	8.84	9.07	**Encroachment Scores**	10.00	10.00	9.17	9.39	9.39
Capability has improved at Fort Bragg over the past several years; however, impacts resulting from the shortfall of training land cannot be fully mitigated by the installation. Additionally, as more UAS are fielded and restricted airspace remains the same, the installation's ability to fully support all aviation training is reduced. It is anticipated that additional UAS fielding will continue to be a challenge for the installation into the future.						On Post encroachment of threatened and endangered species and associated habitats has been well managed within the installation to accommodate training with minimal impact on training. Environmental considerations and oversight activities continue to influence management and new construction of ranges and the restoration and improvement of training lands. External encroachment is under control but needs to continue to be supported through ACUB and REPI programs. External land use practices will continue to threaten the installation boundary with incompatible development such as cell phone towers, multi-unit dwellings and habitat destruction. Current impact of noise, night training, pyrotechnic use and air and water quality degradation is not a factor but requires monthly engagements with municipalities and land owners to sustain compatible practices. Continued and active participation and partnership within the North Carolina Sandhills Conservation Partnership, the Regional Land Use Advisory Council, Army Environmental Command, and the US Fish And Wildlife Service are essential to maintain and address future expansion and incompatible growth that could effect training on Fort Bragg.					

Fort Bragg/Camp Mackall Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Movement & Maneuver	●	There is a 100,000 acre shortfall of training land. Units do not have adequate room to separate and extend their organizations. Solution is to train on other locations.
	Fire Support	●	Same as above.
Airspace	Movement & Maneuver	●	There is not enough airspace for units to employ all their UAS assets and utilize tactical air at the same time. Units are not receiving training on UAS systems. Solution is to train on other locations.
	Fire Support	●	Same as above.
	Intelligence	●	Same as above.
Targets	Fire Support	●	There are not enough hard targets for artillery units to fire at inside the impact areas. Units cannot train on the specific tasks of targeting large or irregular shaped targets. Solution is to train at other locations.
Infrastructure	Movement & Maneuver	●	Bridges in the training areas are unsafe and no longer support the training units. Units do not have adequate road/bridge networks to drive any substantial distances with heavier vehicles. Solution is to train on off post locations.
	Fire Support	●	Same as above.
	Intelligence	●	Same as above.
	Sustainment	●	Same as above.
	Command & Control	●	Same as above.
	Protection	●	Same as above.
Range Support	Movement & Maneuver	●	Range control is short of support personnel in key areas such as maintenance, operations and headquarters areas. This installation was designated as a major training installation for forces along the east coast, which increases an already heavy load of training personnel previously stationed here. Continuing to provide the best support possible with limited personnel.
	Fire Support	●	Same as above.
	Intelligence	●	Same as above.
	Sustainment	●	Same as above.
	Command & Control	●	Same as above.
	Protection	●	Same as above.
Small Arms Ranges	Movement & Maneuver	●	Because of newer weapons with longer ranges, there is insufficient long range shooting areas. Units are not receiving training on the full capabilities of newer weapon systems. Solution is to train on off post locations.
	Fire Support	●	Same as above.
Collective Ranges	Movement & Maneuver	●	TC 25-8 standard collective ranges such as a Multi Purpose Range Complex (MPRC), Infantry Platoon Battle Course (IPBC) and Infantry Squad Battle Course (ISBC) are not available on this installation. Units are not receiving the best possible collective training on their Mission Essential Task List (METL) tasks. Solution is to train on off post locations or use non standard facilities.
	Fire Support	●	Same as above.

Figure 2-9 Army Capability and Encroachment Assessment Detail (continued)

Fort Bragg/Camp Mackall Detailed Comments

Encroachment Observations

Attributes	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Movement & Maneuver	●	Endangered Species restrict training land use. Units do not have adequate room to train on METL tasks. Solution is to train on off post locations.
	Fire Support	●	Same as above.
	Intelligence	●	Same as above.
	Sustainment	●	Same as above.
	Command & Control	●	Same as above.
	Protection	●	Same as above.
Noise Restrictions	Fire Support	●	Artillery detonations disturb nearby neighborhoods. Artillery cannot train during all hours of the day. Units must either use off post locations or cease firing during restricted periods.
Cultural Resources	Movement & Maneuver	●	Sites inside training areas are restricted by cultural resource personnel which inhibit training. Units do not have adequate room to maneuver and train on METL tasks. Solution at this time is to train on off post locations.
	Fire Support	●	Same as above.
Wetlands	Movement & Maneuver	●	Wetlands prohibit expanding ranges and impact areas. Units do not have all the training ranges and impact areas needed for shooting long range weapons. Solution at this time is to train on off post locations.
	Fire Support	●	Same as above.

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Figure 2-9 Army Capability and Encroachment Assessment Detail (continued)

Fort Campbell Assessment Details

Range Mission Description

Fort Campbell is a power projection platform, strategically located on the Tennessee/Kentucky State line. Fort Campbell possesses the capability to deploy mission-ready contingency forces by air, rail, highway, and inland waterway. Fort Campbell develops and maintains live fire maneuver ranges and training areas that support the Senior Commander's Mission Essential Training Tasks List (METTL). Fort Campbell is the home of the 101st Airborne Division (Air Assault) and two Special Operations Command units, the 5th Special Forces Group and the 160th Special Operations Aviation Regiment (SOAR). It is also home to the 86th Combat Support Hospital, the 52nd Ordnance Command, the 716th MP Battalion, 2-44th ADA Battalion, and sizable medical and dental activities. Fort Campbell provides company level maneuver training and mobilization support for numerous Army National Guard and Army Reserve units.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Movement & Maneuver	●	●			●		●	●	●	●	●	●	
Fire Support	●	●			●		●	●	●		●	●	
Intelligence	●	●			●		●	●				●	
Sustainment	●							●	●	●	●	●	
Command & Control	●	●			●		●	●				●	
Protection	●				●		●	●		●	●	●	

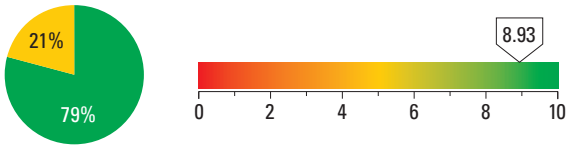
Legend: FMC ● PMC ● NMC ●

Encroachment Data

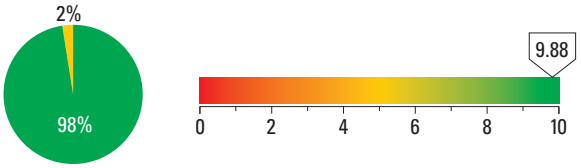
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Movement & Maneuver	●		●		●	●	●	●	●		●	
Fire Support	●		●		●	●	●	●	●		●	
Intelligence	●		●		●		●	●	●		●	
Sustainment	●		●					●	●		●	
Command & Control	●		●		●			●	●		●	
Protection	●		●			●	●	●	●		●	

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

The most severe impact to mission is caused by a shortfall of range support funding along with the lack of available targets because of the radiation control area. While several mission areas are impacted by capability shortfalls, Movement and Maneuver is most severely impacted due to a shortfall of maneuver training land, lack of updated aviation target systems, range support funding shortfalls, and a shortage of smalls arms ranges.

Summary Observations

There is minimal impact to the Mission Areas due to encroachment factors. The presence of threatened and endangered species on the installation has a minimum impact to the Fire Support mission, due to restrictions on mowing for fire safety and visibility on the ranges.

Fort Campbell Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	5.22	5.22	7.00	9.05	9.05	**Encroachment Scores**	10.00	10.00	10.00	9.88	9.88
Capabilities have generally improved at Fort Campbell over the past several years. Range support funding levels have increased and Fort Campbell has mitigated MOUT facility throughput shortfalls internally. Shoot-house construction currently meets training needs, but if lead-free slug (LFS) fielding takes place to support home station training, there will likely be an impact to the installation's capability to meet requirements for MOUT facility throughput due to concerns about use of the LFS in sand filled shoot-houses. Lack of restricted airspace continues to be a concern and will limit the installation's ability to replicate the operational environment for Warrior UAS training in FY2014 when the system is fielded.						Encroachment factors have not historically impacted the mission at Fort Campbell. Minimal impacts resulting from rare species habitat on the installation have developed over the past year, but are being managed successfully through coordination with the USFWS. Current impacts are expected to be resolved and future impacts are not anticipated. Fort Campbell has also worked to actively implement the ACUB Program, to ensure that encroachment does not impact the future mission of the installation. Current ACUB efforts are focused on protecting the flight approach of the installation's primary operational airfield, Campbell Army Airfield; and buffering the small arms impact area, to ensure long-term capability to support the training mission.					

Fort Campbell Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Movement & Maneuver	●	There is a shortfall of available maneuver training land to meet doctrinal maneuver training requirements. Unit maneuver training is limited and movement is constrained to short 1–3 kilometer movements, depending on which training area the unit is assigned. Simultaneous maneuvering for multiple company sized units at doctrinal distances is constrained. Optempo costs are increased for units that travel to other locations to accomplish training events. Fort Campbell is partnering with Fort Knox for training allocation of their maneuver land and ranges.
Airspace	Movement & Maneuver	●	There is limited controlled airspace over the installation. Limited airspace restricts the ability of units to conduct air training exercises to doctrinal standards in terms of dispersion, flight techniques, and integration with other assets, such as UAS. Fort Campbell is partnering with Fort Knox and other training sites to meet training needs.
Targets	Fire Support	●	Fire Support targets have become unusable due to the radiation control area as defined in OPERATIONS ORDER 11-397: US Nuclear Regulatory Commission (NRC) Restrictions on Ranges Affected by Davy Crockett Depleted Uranium (DU) DTD 051031Z May 11. This limits the available impact area. The Army is expecting a new license from NRC that will reopen this area in the next year.
Scoring & Feedback System	Movement & Maneuver	●	The installation does not have an assigned Aviation Weapon Scoring System (AWSS) to support the two Combined Aviation Brigades and the Task Force 160, Special Operations Aviation Regiment. Weapons qualification is dependent on subjective scoring (i.e., line of sight) that does not meet Army standards for qualification. Aviation units do not get consistently accurate feedback when qualifying. The Army has scheduled a rotating AWSS for temporary use at the installation.
Range Support	Movement & Maneuver	●	Recent manpower reductions will cause a 10% cut in range operations starting in FY2016. This will limit installation support for short-term training requests; range reconfiguration projects to support emerging tactics/techniques and procedures; and preventative maintenance. Borrowed Military Manpower will be used to fill this gap.
	Fire Support	●	Same as above.
	Sustainment	●	Same as above.
Small Arms Ranges	Movement & Maneuver	●	The installation continues to have a deficit of two machine gun ranges and three live fire maneuver ranges in FY2014. Unit training time is reduced and optempo costs are increased for units that have to travel to other locations to accomplish training events. Military Construction, Army (MCA) funding is programmed in FY2019 to construct additional ranges.
	Sustainment	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Fire Support	●	The Henslow and Bachman Sparrow nesting habitat is present in the training area. During May-August, training land management actions (i.e. mowing, vegetation removal) are restricted and training use is reduced due to safety concerns (i.e. fire hazards, visibility). The installation is coordinating with regional Fish and Wildlife Service to minimize restrictions and address training impacts.

Figure 2-9 Army Capability and Encroachment Assessment Detail (continued)

Fort Carson and Pinon Canyon Maneuver Site Assessment Details

Range Mission Description

Fort Carson and Pinon Canyon Maneuver Site (PCMS) provide major training facilities (339,000 acres of training land, 92 ranges, 4 layers of restricted airspace) to support and enable relevant and realistic training for Fort Carson's primary users: 4th Infantry Division (Mechanized)-1SBCT, 3ABCT, 4IBCT, 4CAB; 43rd Sustainment Brigade; , 10th Special Forces Group; 1/25 Attack Helicopter Battalion; and 71st EOD Group.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Movement & Maneuver		●			●		●	●	●	●	●	●	
Fire Support	●	●			●		●	●				●	
Intelligence	●	●			●		●	●				●	
Sustainment	●				●			●	●	●	●	●	
Command & Control	●	●			●		●	●				●	
Protection	●				●		●	●		●	●	●	

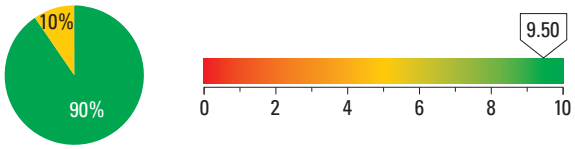
Legend: FMC ● PMC ● NMC ●

Encroachment Data

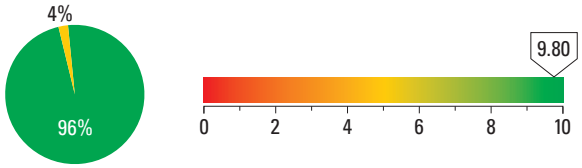
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Movement & Maneuver	●	●	●		●	●	●	●	●	●	●	●
Fire Support	●	●			●	●	●	●	●	●	●	●
Intelligence	●	●		●		●	●	●	●	●		●
Sustainment	●	●							●		●	●
Command & Control	●	●	●		●				●	●		●
Protection	●	●				●	●	●	●	●	●	●

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

The most adverse impacts to mission are caused by training land rehabilitation (time) along with the ability to train on other training lands that are not suitable for heavy maneuvering and inadequate Range Support (staffing levels). While several mission areas are impacted by capability shortfalls, Movement and Maneuver is most adversely impacted due to excessive overtime costs associated with inadequate range staffing levels and lack of restricted airspace at PCMS, impacting military units' abilities to train with UAS and lasers as they would in theater. Currently, the stryker brigade at Fort Carson cannot maneuver at PCMS. Fort Carson has initiated an EIS to assess the impacts of training of the stryker on the environment. The expected completion date for this EIS is second quarter FY2015.

Summary Observations

There are impacts to the mission areas due to encroachment factors. Small workarounds to avoid adverse impacts from the majority of the encroachment factors are utilized. The presence of un-surveyed areas with potential cultural resources are the primary encroachment factor that adversely impacts military training at Fort Carson and PCMS, due to the fact that un-surveyed training lands are deemed "for dismounted training only" until they can be surveyed. PCMS has 1,746 protected sites for a combined acreage of 4,368 acres and 47,042 acres of un-surveyed maneuver lands. Fort Carson has 204 protected sites with a total of 1,306 acres and 22,772 acres of un-surveyed maneuver lands. Based on the new Programmatic Agreement, SHPO has reduced the amount of un-surveyed land to 3,438 acres for Fort Carson. Accordingly, 15,000 acres are within the artillery impact area and associated buffer zone. These lands will not be surveyed due to the possible existence of UXO and the proximity of several firing ranges and their associated surface danger zones. Another factor of self-encroachment of training lands are the total acres encompassed with the Grow the Army initiative. There have been two ranges (Hand Grenade Practice Range and Land Navigation Range), two-drop zones (DZ Range Control and DZ Bad Toelz) and three training areas for a total of 4,693 acres to date. The last factor of self-encroachment is 319 acres of training land for dust mitigation and noise mitigation to the rancher on the southern border.

Fort Carson and Pinon Canyon Maneuver Site Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	6.67	6.67	7.22	9.29	9.29	**Encroachment Scores**	9.24	9.24	10.00	9.71	9.71
Capabilities have generally improved at Fort Carson and PCMS over the past several years. The use of Military Construction projects and self help assets have postured the installation at an adequate readiness level to support the training throughput requirements of current stationing levels. It is anticipated that the most critical shortfall, Range Support (personnel) will not improve in the near term, due to recent proposed manpower reductions that will cause an overall 38% cut in range operations starting in FY2015 (phased over the next 5 years into FY2020). The ability to obtain restricted airspace over PCMS will be a challenge, and it is anticipated that this lack of restricted airspace will cause future capability shortfalls as additional UAS and rotary wing aircraft are fielded in the out years.						Encroachment factors have not historically had a significant impact on the mission at Fort Carson and PCMS. Fort Carson is re-evaluating procedures for planning/implementing training events to ensure all regulatory requirements, including protection of cultural resources, are being met. The use of best management practices in sustaining the training lands has also contributed to additional lands being added back into the training inventory. Additionally, Fort Carson has been able to prevent encroachment impacts from adjacent land use, due to implementation of the ACUB Program. Given the fact that communities near Fort Carson are aggressively promoting development, it is vital that the ACUB Program continue to be funded to prevent incompatible development around the installation that would negatively impact the training mission.					

Fort Carson and Pinon Canyon Maneuver Site Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Airspace	Movement & Maneuver		PCMS currently has no restricted airspace and cannot support UAS training above Raven at 1500ft AGL, lasers, and 120mm mortar firing. Units cannot use other UAS assets and, therefore, cannot train as they fight. The installation is executing the necessary steps and procedures to seek and obtain restricted airspace. Meanwhile, units must execute UAS training at Fort Carson and simulate UAS operations at PCMS.
Range Support	Movement & Maneuver		Recent manpower proposed reductions will cause a 38% cut in range operations starting in FY2015 (phased over the next 5 years into FY2020). This will create excessive overtime requirements to sustain prolonged training and enable support of mission requirements. Borrowed Military manpower will be used to fill the gap created by this manpower reduction.
	Sustainment		Same as above.
Small Arms Ranges	Protection		New ammunition cannot be safely fired on some small arms ranges without control measures. Control measures make some adjacent areas not available for training during live fire. The installation is programming the baffelling of these ranges.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Cultural Resouces	Movement & Maneuver		Fort Carson and PCMS possess training lands that have not been surveyed for cultural resources, and training on this land is limited to dismounted training only. Restrictions cause limitations to large scale maneuver exercises. Additionally, all efforts to utilize restricted areas for training require time and resources to work through the Section 106 consultation process. Fort Carson is slowly working towards 100% survey completion. Fort Carson and PCMS have programmatic agreements in place with the SHPO to ease the burden and overhead of all efforts going through the Section 106 consultation process.
	Sustainment		Same as above.

Figure 2-9 Army Capability and Encroachment Assessment Detail (continued)

Fort Drum Assessment Details

Range Mission Description

Fort Drum provides major facilities to support combat readiness and combat support training for multi-service active, reserve and national guard units, including the capability for planning and supporting deployment operations. Primary training units include the 10th Mountain Division (LI), the 7th Engineer Battalion, the 91st Military Police Battalion, and multiple reserve component units. Fort Drum's ranges and training areas also support two institutional elements: the Light Fighters School and the NCO Academy. The NCO Academy uses the training areas to conduct Warrior Leader courses and the Light Fighters School uses the training areas to conduct field-training exercises. The numerous live-fire ranges support weapons familiarization training and qualification. The large caliber facilities can also support collective live fire training events. The capabilities available on the installation to support requirements by the Armed Forces of the United States is visible by the presence of all services that train on Fort Drum. This includes but is not limited to the law enforcement agencies, both local and federal, and the local communities. The Installation's air to ground range provides joint training integration for Army, Marine, Air Force, SOCOM, National Guard and USAR.

Capability Data

Mission Areas	Capability Attributes												
	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
Movement & Maneuver	PMC	FMC			FMC		FMC	FMC	FMC	FMC	PMC	FMC	PMC
Fire Support	FMC				FMC		FMC	FMC	FMC	FMC	FMC	FMC	FMC
Intelligence	FMC				FMC		FMC	FMC				FMC	
Sustainment							FMC	FMC	FMC	FMC	FMC	FMC	FMC
Command & Control					FMC		FMC	FMC	FMC			FMC	
Protection					FMC		FMC	FMC	FMC			FMC	

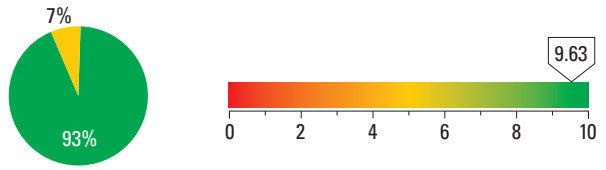
Legend: FMC PMC NMC

Encroachment Data

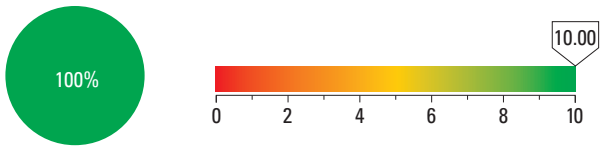
Mission Areas	Encroachment Factors											
	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Movement & Maneuver	Minimal		Minimal		Moderate	Moderate	Moderate	Moderate	Moderate		Minimal	
Fire Support	Minimal		Minimal		Moderate	Moderate	Moderate	Moderate	Moderate		Minimal	
Intelligence	Minimal		Minimal		Moderate		Moderate	Moderate	Moderate		Minimal	
Sustainment	Minimal		Minimal						Moderate		Minimal	
Command & Control	Minimal		Minimal		Moderate				Moderate		Minimal	
Protection	Minimal		Minimal			Moderate	Moderate	Moderate	Moderate		Minimal	

Legend: Minimal Moderate Severe

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

Fort Drum training ranges are slightly impacted by water; resulting in an inability to utilize certain ranges due to high water levels. Management of the beaver population in the area is used as a means to minimize these conditions and control water levels. The use of range dispersion and range alignment allows Fort Drum to simultaneously support up to three separate units conducting small arms marksmanship and/or qualification training.

Summary Observations

There is minimal impact to the Mission Areas due to encroachment factors. The presence of threatened and endangered species on the installation currently has no significant impact on the training mission; however, Fort Drum is the location of at least one maternity colony of the federally endangered Indiana Bat. In addition to this one federally-listed species, there are 28 state-listed wildlife species, and 22 state-listed rare plant species. The known Indiana Bat colony is mostly protected through the establishment of a Bat Conservation Area; 2,200 acres of relatively undeveloped land in the cantonment area.

Fort Drum Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	5.11	5.11	8.15	9.19	9.19	**Encroachment Scores**	9.10	9.10	10.00	10.00	10.00
Capabilities have generally improved at Fort Drum over the past several years. Range support funding has allowed Fort Drum to conduct target replacement; however, projected manpower cuts will hamper the ability to serve using units in a timely manner. Fort Drum training areas and ranges currently have capacity, when requirements are fully funded, to support Army Force Generation (ARFORGEN) individual and collective live, virtual, constructive and gaming training requirements for the 10th Mountain Division and assigned Brigade Combat Teams/Brigade Headquarters, along with tenant units and aligned units.						Fort Drum's training capabilities have not historically been impeded or degraded by encroachment. Fort Drum has aggressively eliminated or mitigated noise-related and adjacent land-development impacts through community outreach efforts and the ACUB Program. While the current overall threat of encroachment impacts to Fort Drum's training capabilities is extremely low, potential of future encroachment remains a consideration due to the possibility of emerging missions as well as planned development along the northwestern borders of the installation that have the potential to push existing natural habitats onto the installation. To date, 20 conservation easements protecting nearly 4,700 acres bordering the installation have been protected through the ACUB Program. Three parcels targeted for ACUB easements in FY2014 will buffer Fort Drum's aviation APZs. Development in areas critical to flight missions and flight training have the potential to impact or limit some flight operations. Approach and departure routes as well as traffic patterns need to remain protected from incompatible development. Some potential encroachment issues may come from residential and commercial development. A robust mitigation strategy to maintain a safe and comprehensive aviation airspace in support of the Fort Drum mission is a key and essential component to future mission capability. Fort Drum also supports extensive UAS missions making protection of airspace and land training areas critical. The possibility of emerging future mission requirements that create a potential for encroachment are also under consideration as Fort Drum prepares the FY2015 REPI proposal for more ACUB easements; Fort Drum's five-year ACUB project plan focuses on areas south of the installation in order to protect APZs as well as establish a buffer to protect potential future defense assets. The installation will continue to forward plan into the out years to mitigate encroachment issues. Fort Drum has undertaken several other coordinated planning efforts to address encroachment threats. For example, Fort Drum maintains an excellent relationship with the community and the Fort Drum Regional Liaison Organization (FDRLO). The FDRLO has the mission of preserving positive inter-relationships and communication between the civilian and military communities and leaders in the tri-county region of Northern New York State. Encroachment was identified as a strategic issue and emerging threat to readiness and training in the 2009 Fort Drum Growth Management Strategy as prepared for the FDRLO and continues to be addressed by several of the installation's strategic action goals. The objectives include public outreach to neighboring communities, seeking innovative partnerships, opening lines of communication, participating in key forums such as the Fort Drum Town Hall Meetings, and various State and county forums. Fort Drum has a strong relationship with surrounding communities, which ensures the installation remains informed of any planned development in the vicinity of the installation's boundaries. This relationship affords Fort Drum the opportunity to address concerns with local planning boards prior to the development taking place. FDRLO has backed the Fort Drum Regional Growth Management Strategy Plan project which links community with Fort Drum in making decisions that allow Fort Drum to operate un-encroached while the community enjoys economic growth.					

Figure 2-9 Army Capability and Encroachment Assessment Detail (continued)

Fort Drum Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Movement & Maneuver	●	The Fort Drum training area totals 77,193 acres, comprised of 64,989 acres classified as maneuver/training land – light, and 12,204 acres classified as maneuver/training land – heavy. Fort Drum units can fully utilize 76,031 acres of maneuver training area. The remaining 1,162 acres are designated off-limits to all ground training due to natural/cultural resources restrictions, other designated land use (ASP), or UXO contamination. The net available land for training includes 63,894 acres of maneuver/training land – light, 12,136 acres of maneuver/training land – heavy; the 20,222 acre main impact area; and the numerous ranges and other training facilities at Fort Drum. Using the Combined Arms Training Strategies (CATS), the largest individual Fort Drum land requirement is 88,956 acres for an Infantry Brigade Combat Team (IBCT) maneuver training event. Comparing this requirement to the total Fort Drum Training Area of 77,193 acres, Fort Drum has a deficit of 11,763 acres for an IBCT maneuver training event.
Collective Ranges	Movement & Maneuver	●	Fort Drum currently only has one Infantry Platoon Battle Course (IPBC). Fort Drum has requested the addition of a second IPBC in the Range Complex Master Plan in order to meet training requirements. Fort Drum currently utilizes two available multi-purpose training ranges to ensure units can conduct platoon size training events.
Suite of Ranges	Movement & Maneuver	●	Fort Drum currently only has two multi-purpose machine gun ranges. Fort Drum currently uses several ranges to complete heavy machine gun qualification. Fort Drum will continue to utilize ranges for multiple purposes until the required facilities are acquired.

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Figure 2-9 Army Capability and Encroachment Assessment Detail (continued)

Hawaii Assessment Details

Range Mission Description

The mission of the U.S. Army Pacific (USARPAC) is to execute continuous training and readiness oversight responsibilities for Army Force Generation in Hawaii. On order, execute Joint Force Land Component Command functions in support of Homeland Defense and Security in Hawaii. The mission of U.S. Army Garrison Hawaii (USAG-HI): (1) Plan and execute on-order deployment support, force protections, and contingency operations, (2) Plan and execute transformation of the installation garrison that supports STRYKER and other mission units, (3) Provide quality installation support and services to our customers, (4) Maintain and improve infrastructure and training areas, (5) Provide proper stewardship of all resources and the environment, (6) Sustain strong community relations. and (7) Provide for the well-being of the Army Family into the 21st Century.

Capability Data

Mission Areas	Capability Attributes												
	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
Movement & Maneuver	NMC	FMC			FMC		FMC	FMC	FMC	NMC	NMC	FMC	
Fire Support	FMC	FMC			FMC		FMC	FMC	FMC		NMC	FMC	
Intelligence	FMC	FMC			FMC		FMC	FMC				FMC	
Sustainment	FMC							FMC	FMC	NMC	NMC	FMC	
Command & Control	FMC	FMC			FMC		FMC	FMC				FMC	
Protection	FMC				FMC		FMC	FMC		NMC		FMC	

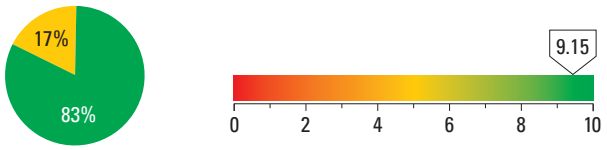
Legend: FMC, PMC, NMC

Encroachment Data

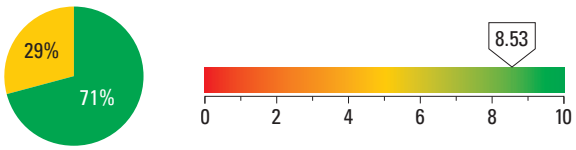
Mission Areas	Encroachment Factors											
	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Movement & Maneuver	Moderate	Moderate	Minimal		Moderate	Minimal	Minimal	Minimal	Moderate		Minimal	Moderate
Fire Support	Moderate	Moderate	Minimal		Moderate	Minimal	Minimal	Minimal	Moderate		Minimal	Minimal
Intelligence	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Moderate		Minimal	Minimal
Sustainment	Minimal	Minimal	Minimal						Moderate		Minimal	Moderate
Command & Control	Minimal	Moderate	Minimal		Minimal	Minimal			Moderate		Minimal	Minimal
Protection		Minimal	Minimal				Minimal	Minimal	Moderate		Minimal	Minimal

Legend: Minimal, Moderate, Severe

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

The most adverse impacts to mission are caused by a deficit of Small Arms and Collective Ranges. While several mission areas are impacted by capability shortfalls, Movement and Maneuver is the most adversely impacted, due to a maneuver training land shortfall and a deficit of multi-purpose machine gun ranges and collective ranges to support aviation gunnery.

Summary Observations

There is a moderate impact to the mission areas due to encroachment factors. The most significant impacts are caused by the presence of threatened and endangered species and cultural resources on the installation. The mission areas that are most impacted are Movement and Live Fire Maneuver and Sustainment, due to training restrictions and limitations resulting from endangered species, lawsuits related to cultural resource access, and trespassing by recreational land users.

Hawaii Assessment Details

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Capability Scores	N/A	N/A	7.67	8.66	9.15

Capabilities have remained improved in Hawaii over the last two years. Range support funding improved slightly in FY2011 and additional manpower will be provided in FY2012, likely resulting in increased range capability in the out-years. A shortfall of a Multi-Purpose Machine Gun Range and Collective Range to support aviation gunnery has also continued to impact capability in Hawaii. A request to construct a standard design range has been submitted; Collective Range capability should improve in the out-years.

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Encroachment Scores	N/A	N/A	8.78	8.67	8.78

Encroachment impacts on the mission in Hawaii have remained relatively stable over the past couple years. The biological opinion (BO) is currently being amended so that live fire training with ball ammunition may be conducted while the burn index is in the red, thus increasing unit training capability. Two types of encroachment continue to impact Hawaii training areas and ranges. External encroachment factors, such as land development and increased housing construction will continue to increase pressure on training areas and ranges in the future. With increased development near the installation boundaries maneuver areas and impact areas are affected by restrictions on noise. A significant encroachment factor on training is the increased development of wind farms near installation boundaries that affect aviation training and MEDEVAC requirements. Internal encroachment factors also impact the mission. Natural and cultural resource issues cause range closures and stop training. For example, when a threatened or endangered species is seen within a training area or range, all training is to stop, thus decreasing the capability associated with that range or training area.

Hawaii Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Movement & Maneuver		Increased maneuver throughput is required due to one Stryker Brigade Combat Team (SBCT) being based in Hawaii. There is limited maneuver area on Oahu and logistically SBCTs have to move by boat to Pohakuloa Training Area (PTA) to conduct a portion of their Mission Essential Task List training. Even with PTA, Hawaii is still short on required maneuver land because much of the area is not able to support the Stryker vehicle due to environmental no-go areas. Restrictions do not allow units to train to METL standard. The Army will work through the constraints of the BO in order to allow for additional trainings areas to become available (Expansion of PTA and Keamuku maneuver area).
Small Arms Ranges	Movement & Maneuver		Hawaii has a deficit of one Machine Gun range. Units are currently unable to conduct training to Army standards. Units are using alternative qualification standards (10 meter table).
	Sustainment		Same as above.
	Protection		Same as above.
Collective Ranges	Movement & Maneuver		Hawaii has a deficient Aviation Gunnery capability. Units are currently unable to train to standard Gunnery table. The range has submitted a request to construct a standard design range.
	Fire Support		Same as above.
	Sustainment		Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Movement & Maneuver		Endangered species habitat limits maneuvers only to existing roads and trails. Maneuver training areas are restricted to existing roads and trails, thus limiting training scenarios and training realism. Will continue to train within the restrictions set forth by the biological opinions (BO).
	Fire Support		The wildland fire risk limits training capabilities. The wildland fire risk in conjunction with a limited impact area, causes throughput restrictions; live fire is limited to PTA and training round usage is restricted by caliber. The Army will continue to operate within the constraints of the BO for each of the training ranges and expand training options as they become available in accordance with the BO.
Munitions Restrictions	Movement & Maneuver		Munitions are restricted to generally non-fire producing ordnance in most live fire areas. This limits the Combined Arms Live Fire Exercise (CALFEX) capabilities at Company level to provide realistic training since not all ordnance types are authorized at applicable ranges. The restrictions generally include rockets (due to motors), smoke, illumination and pyrotechnics.
	Fire Support		Same as above.
	Command & Control		Same as above.

Figure 2-9 Army Capability and Encroachment Assessment Detail (continued)

Hawaii Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Airpsace	Movement & Maneuver	●	There are Airspace limitations. Airspace near the Schofield Barracks reservation does not allow for high angle artillery fire due to the limited airspace that would cover such activities. An extended airspace area would allow for longer range and high angle artillery fires that are essential to training gun crews.
	Fire Support	●	Same as above.
Cultural Resources	Movement & Maneuver	●	There are live fire restrictions on the Makua Military Reservation. Resuming live fire training at Makua continues to be delayed pending additional litigation over access to cultural sites. Live fire training activities are being conducted at alternate locations in Hawaii. Other training strategies are being pursued at Makua.
	Fire Support	●	Same as above.
	Intelligence	●	Same as above.
	Sustainment	●	Same as above.
	Command & Control	●	Same as above.
	Protection	●	Same as above.
Range Transients	Movement & Maneuver	●	Recreational motor cross riders enter restricted areas of the Kahuku training area. Motor cross riders are a training distraction and cause damage to the land that increases erosion and results in land repair costs. The solution would be to install fencing along with no trespassing signs to protect the training area.
	Sustainment	●	Same as above.

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Figure 2-9 Army Capability and Encroachment Assessment Detail (continued)

Fort Hood Assessment Details

Range Mission Description

Fort Hood is focused on preparing soldiers and Units for full spectrum operations and on taking great care of soldiers, Families, and Civilians. Fort Hood is the largest active duty armored post in the United States, and is the only post in the United States that is capable of supporting two full armored divisions. With 88 separate ranges, 56 numbered training areas, 4 airfields, artillery ranges, rappel towers, land navigation courses, leadership reaction courses, and several airborne and equipment drop zones, Fort Hood provides major training facilities to support deployment training and mobilization for the 1st Cavalry Division and the 3rd Armored Regimental Cavalry.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
Movement & Maneuver	PMC	FMC			FMC	FMC	FMC	PMC			FMC	FMC	FMC
Fire Support	FMC	FMC			FMC	FMC	FMC	FMC			FMC		FMC
Intelligence	FMC	FMC			FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC
Sustainment	FMC	FMC			FMC	FMC	FMC	PMC	FMC	FMC	FMC	FMC	FMC
Command & Control	FMC	FMC			FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC
Protection	FMC	FMC			FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC

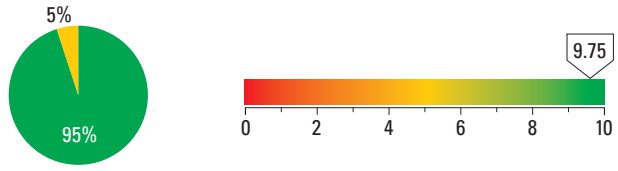
Legend: FMC PMC NMC

Encroachment Data

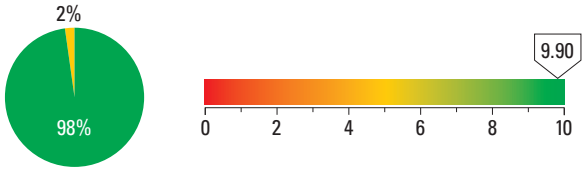
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Movement & Maneuver	Minimal	Minimal			Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Fire Support	Minimal	Minimal			Moderate		Moderate	Moderate	Moderate			
Intelligence	Minimal	Minimal				Moderate	Moderate		Moderate	Moderate		Moderate
Sustainment	Severe	Minimal				Moderate		Moderate	Moderate	Moderate	Moderate	Moderate
Command & Control	Minimal	Minimal			Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Protection	Minimal				Moderate	Moderate			Moderate	Moderate	Moderate	Moderate

Legend: Minimal Moderate Severe

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

The Army continues to increase platform and weapon system lethality and C2 capabilities within tactical systems enabling units combat areas of responsibilities to increase exceeding the available training acreage. This increase in maneuver and range land requirements is managed by reducing dispersion and increasing the use of virtual and simulations to meet training requirements. While Fort Hood is able to meet training requirements, the ability to sustain the training land, facilities, and enablers is more challenging with the reduction of available funding. The Army must balance the available dollars between quality of life and quality of training in order to maintain the installations ability to support Garrison administrative areas and field environments. The use of sustainment, repair and maintenance funding must be allocated against the facilities equitably, and the ability to protect TSS support funds from re-allocation to non-TSS expenditures must be strictly enforced.

Summary Observations

Direct impacts to training by encroachment of threatened and endangered species are relatively minor and primarily affect the times or durations that units can occupy core habitat areas.

Fort Hood Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	5.33	5.33	7.44	9.22	9.22	**Encroachment Scores**	7.93	7.93	9.52	9.52	9.52
Fort Hood's capability to support training has increased over the past ten years with the modernization of legacy ranges and the addition of new facilities such as two shoot houses, three urban assault courses, one combined arms collective training facility and one digital multi purpose training range. Maneuver capability has increased with thinning and brush removal projects, training area re-seeding and gully plugs executed by the Integrated Training Area Management (ITAM) system. The installation continues to increase the availability of automated systems - such as Home Station Instrumentation Systems - to enhance maneuver tracking and evaluation. This further enhances capabilities in spite of an estimated 153,545 acres of maneuver land shortage. Fort Hood remains viable and relevant to support five maneuver brigades by allocating resources efficiently; incorporating virtual, simulations, and gaming technologies; and continuing to maintain and enhance legacy ranges and maneuver training lands. The Range Complex Modernization Program continues to plan for the modernization of ranges as funding becomes available to support major military construction programs in the out years.						Internal encroachment of threatened and endangered species (TES) and associated habitats has been well managed within the installation to accommodate training with minimal impacts. The installation's ability to maintain the training land and construct new ranges that meet Army standards is increasingly more difficult. This is due to the inability to perform work during TES nesting season which begins the first of March and ends the 30th of June annually. External encroachment by communities is being addressed by the use of the ACUB Program to minimize land use practices that could conflict with critical military training activities conducted on Fort Hood. The main concerns arising from incompatible land use practices developing adjacent to the installation boundary are the restrictions that could be imposed upon the heavy military training activities conducted on Fort Hood. These restrictions could result from noise, night training, pyrotechnics use, and air quality degradation. The cities of Killeen, Copperas Cove, and Gatesville are experiencing rapid growth, which threatens to spread along the boundaries of Fort Hood, particularly along the western boundary, adjacent to the primary maneuver lands. Immediate action to address the continued expansion is critical to the training mission at the installation by preserving the compatible land use practices associated with these areas.					

Fort Hood Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Movement & Maneuver	●	Physical land available for maneuver training land is approximately 153,546 acres less then required to support one heavy and one light BCT in maneuver; however, all required maneuver training is accomplished by reduced spacing, gated training strategy and/or the use of virtual and constructing training event. Approximately 83,167 acres of TAs have woody vegetation constraints impacting MILES in TAs. An additional 70,000 acres of endangered species habitat restricts military excavations on the installation. Training is not conducted to doctrinal dispersion distances, MILES engagements are degraded and survivability measures are simulated. Training is conducted with reduced distance and the use of virtual training is increased. All in ground survivability is simulated with above ground structures. There are no land acquisitions proposed.
Infrastructure	Movement & Maneuver	●	Approximately 153,546 acres are needed to support one heavy and one light BCT in maneuver. Doctrinal distances between units cannot be replicated. Training is conducted with reduced distance and the use of virtual training is increased. All in-ground survivability is simulated with above ground structures.
	Sustainment	●	Current funding levels result in approximately 161 miles of tank trails in need of repair, unserviceable hillside access trails and stream and pipeline crossings. Bridges exist with insufficient load class capabilities to support armored vehicles. Training is conducted at increased risk levels due to lack of infrastructure maintenance. Optempo miles increase to access training areas where bridge load class cannot support armored vehicle traffic. MILCON projects are being requested to repair bridges in the out years, beyond 2019.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Sustainment	●	Sustainment is prohibited by endangered species restrictions March - August as well as presence of migratory birds from February through August on 132,608 acres of training lands. Maintenance and land improvement projects are limited to September through January, resulting in less work being accomplished to support training annually. This results in degraded training due to vegetation growth blocking miles of maneuver lanes and unserviceable trails. While there is no relief for endangered species nesting, work may proceed during migratory bird season if biologists are funded and present to conduct surveys in front of work crews resulting in significantly higher project costs.

Figure 2-9 Army Capability and Encroachment Assessment Detail (continued)

Fort Irwin Assessment Details

Range Mission Description

Fort Irwin and the National Training Center (NTC) is a world class training center for America's Military. The NTC is a key part of the Army's Combat Training Centers (CTCs). Training at NTC is focused on joint and combined arms training in multi-national venues across the full spectrum of conflict set in a contemporary operating environment. These training assets assist Commanders in developing trained, competent leaders and soldiers by presenting them with current problem sets to improve the force and prepare for success in the Global War on Terrorism and future joint battlefields. Fort Irwin and NTC supports rotational, tenant (11th Armored Calvary Regiment and the 916th Support Brigade), and Reserve component units.

Capability Data

Mission Areas	Capability Attributes												
	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
Movement & Maneuver	FMC	FMC			PMC	PMC	FMC	PMC	PMC	FMC	PMC	FMC	FMC
Fire Support	NMC	NMC			FMC	PMC	FMC	PMC	PMC	FMC	FMC	FMC	FMC
Intelligence	FMC	FMC				FMC	FMC	PMC	PMC	FMC	FMC	FMC	FMC
Sustainment	FMC	FMC				FMC	FMC	PMC	PMC	FMC	FMC	FMC	FMC
Command & Control	FMC	FMC			FMC	FMC	FMC	PMC	PMC	FMC	FMC	FMC	FMC
Protection	FMC	FMC			FMC	FMC	FMC	PMC	PMC	FMC	FMC	FMC	FMC

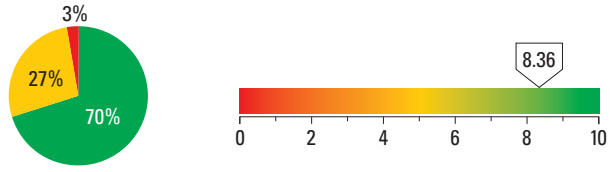
Legend: FMC PMC NMC

Encroachment Data

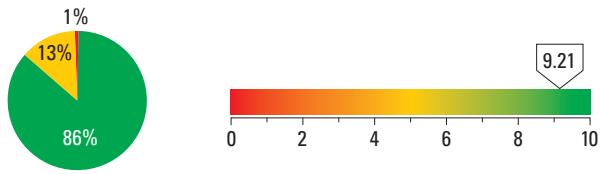
Mission Areas	Encroachment Factors											
	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Movement & Maneuver	Minimal	Minimal	Moderate		Moderate	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Fire Support	Minimal	Moderate	Moderate		Severe	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Intelligence	Minimal	Minimal	Moderate		Minimal	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal
Sustainment	Minimal	Minimal	Moderate		Minimal	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal
Command & Control	Minimal	Minimal	Moderate		Minimal	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal
Protection	Minimal	Minimal	Moderate		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal

Legend: Minimal Moderate Severe

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

The most significant impacts to mission are caused by insufficient Range Support funding and aging targetry. The lack of sustained funding to support the Range and Training Land Program significantly impacts unit movement. Insufficient funding to resource range instrumentation modernization, including live fire targetry, impacts the quality of combined arms maneuvers.

Summary Observations

Transition to the 18-day rotational model and the increased troop list integrating a third maneuver battalion into the BCT structure creates a training area maneuver conflict that impedes the use of designated ranges at the Fort Irwin National Training Center (NTC). The Army is forced to write parts of these areas into the training scenarios to gain appropriate space for more maneuvering units during training, thus reducing usage rates.

Historical Information, Results, and Future Projections

Calendar Year	2008	2009	2010	2011	2012
Capability Scores	7.45	7.45	7.84	8.70	8.70

The NTC's range capability will slowly improve over the next 36 months as appropriations for maintenance and restructuring take shape to accommodate higher usage levels. The NTC envisions through higher participation of Unified Action Partner, National Guard, and Reserve units as the force stabilizes after the Army enters "Steady State" in the ARFOGEN process.

Historical Information, Results, and Future Projections

Calendar Year	2008	2009	2010	2011	2012
Encroachment Scores	9.75	9.75	8.50	8.61	8.61

There is moderate impact to the mission areas due to encroachment factors. The presence of range transients is the factor causing the greatest impact to mission. While several mission areas are impacted, Movement & Maneuver is most significantly impacted due to loss of maneuver space resulting from endangered species, spectrum competition from the NASA station, limited airspace, and range transients.

Fort Irwin Detailed Comment

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Fire Support	🔴	Firing of ATACMS due to range is a problem. The minimum range ATACMS can fire is 75Km. Currently, the NTC does not have the landspace to accommodate this capability; therefore, the use of China Lake and NTC to meet the requirements in a combined manner as the best recommendation.
Airspace	Movement & Maneuver	🟡	Currently the NTC does not have the airspace authorized for enough airspace to provide for all Air Force aircraft to fly in support of close air support missions (CAS) and in support of combined live fire missions (CALFEX) due to the lack of adequate air corridors. The Air Force is unable to fly all aircraft and utilize all ordnance to conduct CAS. The Air Force requires high level coordination to overcome airspace corridor authorization issue with FAA to allow combined airspace from Nellis AFB, NV down through and into NTC airspace and back to be able to provide all the necessary support required.
	Fire Support	🔴	Firing of ATACMS due to range is a problem. The minimum range ATACMS can fire is 75Km. Currently, the NTC does not have the landspace to accommodate this capability; therefore, the use of China Lake and NTC to meet the requirements in a combined manner as the best recommendation.
Targets	Movement & Maneuver	🟡	The increased use of legacy target infrastructure (most Stationary Armor Target (SAT) devices are over 20 years old) coupled with reduced target maintenance and modernization budgets will negatively impact the quality of live fire training. Presently, legacy targets are not compliant with the Future Army System of Integrated Targets (FASIT) and replacement parts are no longer available in the Army inventory. Maintenance crews must now employ creative ways to maintain targets and target infrastructure. It is imperative that NTC have live fire targetry at 100% FASIT compliant and the replacements of Hoffman devices with Battle Effect Simulators (BES) remain a priority. The solution is for the Combat Training Centers-Directorate (CTC-D) to fund over the next 5 years a target and BES replacement to ensure no degradation of live fire training occurs.
Threats	Movement & Maneuver	🟡	The increased use of legacy battle effects simulators (most BES devices are over 20 years old) coupled with reduced target maintenance and modernization budgets will negatively impact the quality of live fire training. Presently, legacy BES are not compliant with the FASIT and replacement parts and charges are no longer available in the Army inventory. The solution is for CTC-D to fund over the next 5 years a target and BES replacement to ensure no degradation of live fire training occurs.
	Fire Support	🟡	There is a lack of realistic Aviation Survivability training due to a lack of funding (Army G8) to install common missile warning system (CMWS) on all aircraft. This results in a lack of credible COE for Integrated Air Defense. The solution is to secure funding for CMWS.
Infrastructure	Movement & Maneuver	🟡	For the past 13 years, the NTC live fire area (LFA) focus was company live fire exercises. In FY2014, NTC began to transition to battalion and brigade live fire exercises. Current communications systems cannot support the expanded requirement. The solution includes coordinating w/ PEO- Simulation Training & Infrastructure (STRI) to replace fiber in LFA to transmit commands over high gain antenna. If necessary, the NTC may also need to coordinate w/ FORSCOM to fund repair of high gain antenna.
	Fire Support	🟡	Same as above.
	Intelligence	🟡	Same as above.
	Sustainment	🟡	Same as above.
	Command & Control	🟡	Same as above.
	Protection	🟡	Same as above.
Range Support	Movement & Maneuver	🟡	The lack of active radar system to actively control aircraft and airspace to clear fires is an associated problem. The NTC needs the capability to have persistent access to a local, low altitude, three-dimensional radar source to provide exercise control, feedback/after action review (AAR) and Airspace Command and Control. Analysis is ongoing to procure a system to provide capability.
	Fire Support	🟡	Same as above.
	Intelligence	🟡	Same as above.
	Sustainment	🟡	Same as above.
	Command & Control	🟡	Lack of critical communications infrastructure to safely and effectively accomplish the full spectrum of mission-essential training. The ability to communicate within the range complex is a requirement IAW AR 385-63 (RANGE SAFETY). Training is currently prohibited in Western and limited in Eastern, Southern, Northern and Live Fire training areas. The Army will develop way ahead and secure funding to update and expand NTC's critical communications, instrumentation and infrastructure to facilitate full-spectrum operations in all of NTC's training areas (Eastern, Western, Northern and Live Fire training areas).
	Protection	🟡	Lack of critical communications infrastructure to safely and effectively accomplish the full spectrum of mission-essential training. The ability to communicate within the range complex is a requirement IAW AR 385-63. Training is currently prohibited in western training areas and limited in Eastern, southern, and northern live fire training areas. The solution is to develop way ahead and secure funding to update and expand NTC's critical communications, instrumentation and infrastructure to facilitate full-spectrum operations in all of NTC's training areas.

Figure 2-9 Army Capability and Encroachment Assessment Detail (continued)

Fort Irwin Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Collective Ranges	Movement & Maneuver		NTC does not have a digital multipurpose range complex (DMPRC) Units can not conduct all tasks on multipurpose training range (MPTR). This requires use of live fire target array that supports rotation. DMPRC analysis is ongoing. Once validated, the NTC will submit it for MILCON.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Munitions Restrictions	Fire Support		There is a limited distribution of Rocket Assisted Projectiles (RAP), 155mm, IR, Illum, and 795 rounds. This limited distribution does not afford ISS Cannon units the opportunity to train all special munitions. The solution is to increase the availability of ISS special munitions to all rotational units.
Spectrum	Movement & Maneuver		There is a lack of critical communications infrastructure to safely and effectively accomplish the full spectrum of mission-essential training. The ability to communicate within the range complex is a requirement IAW AR 385-63. Fort Irwin is working to develop a way ahead and secure funding to update and expand NTC's critical communications, instrumentation, Spectrum Monitoring Engineering System (SMECS), and infrastructure to facilitate full-spectrum operations in all of NTC's training areas (eastern, western, northern, southern and live fire training areas) and mitigate spectrum encroachment.
	Fire Support		Same as above.
	Intelligence		Same as above.
	Sustainment		Same as above.
	Command & Control		Same as above.
	Protection		Same as above.
Airspace	Movement & Maneuver		Currently the NTC does not have enough airspace authorized for all Air Force aircraft to fly in support of close air support missions (CAS) and in support of combined live fire missions (CALFEX) due to the lack of adequate air corridors. This degrades the ability to provide CAS for rotation. The Army is working to develop a COA for airspace.
	Fire Support		Firing of Army Tactical Missile System (ATACMS) due to range/airspace is a problem. The minimum range ATACMS can fire is 75Km. Currently, the NTC does not have the landspace to accommodate this capability. If ATACMS is authorized, a point where the firing point and target are at least 75KM away and does not interfere with airspace is necessary. The Army uses China Lake and NTC to meet the requirements in a combined manner as the best recommendation.

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Figure 2-9 Army Capability and Encroachment Assessment Detail (continued)

Joint Base Lewis-McChord Assessment Details

Range Mission Description

Joint Base Lewis-McChord provides training land and ranges for FORSCOM, SOCOM, Air Force, and non-tenant Armed Forces. The range complex supports daily ground and air combat training including small arms ranges, maneuver ranges, drop zones, maneuver training areas, restricted airspace, and facilities (such as Combined Arms Collective Training Facility (CACTF)). Primary users include I Corps, 7ID, 1st Special Forces Group, 2nd Battalion/75th Rangers, 62nd Airlift Wing, and the Washington National Guard.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Movement & Maneuver	PMC	PMC			PMC	FMC	FMC	FMC	NMC	FMC	FMC	FMC	FMC
Fire Support	FMC	PMC			FMC		FMC	FMC	NMC	FMC	PMC	FMC	FMC
Intelligence	FMC						FMC	FMC	NMC	FMC	FMC	FMC	FMC
Sustainment	FMC	FMC			FMC		FMC	FMC	NMC	FMC	FMC	FMC	FMC
Command & Control	FMC						FMC	FMC	NMC	FMC	FMC	FMC	FMC
Protection	FMC						FMC	FMC	NMC	FMC	FMC	FMC	FMC

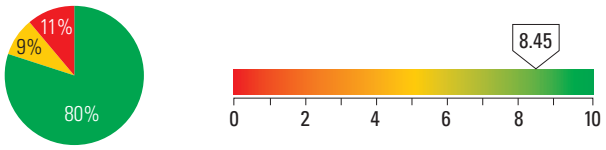
Legend: FMC PMC NMC

Encroachment Data

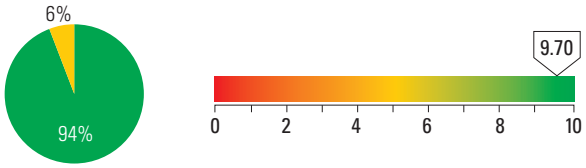
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Movement & Maneuver	Moderate	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Moderate	Minimal	Minimal	Minimal
Fire Support	Minimal	Minimal	Minimal		Moderate	Minimal	Moderate	Minimal	Minimal	Minimal	Minimal	Minimal
Intelligence	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Sustainment	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Command & Control	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Protection	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal

Legend: Minimal Moderate Severe

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

JBLM observed several capability related issues during this assessment. Range Support: Current Table of Distribution and Allowances (TDA) for range support is 16 authorized personnel for JBLM, the third largest Army installation in the United States. Range Support does not have the personnel required to provide 24/7 hours of operation to safety standards. Landspace: JBLM-Main Range Complex is 68,000 acres. Although this is insufficient for the customer base, especially stryker brigades, most battalion and above training is conducted at JBLM-Yakima Training Center (YTC), which provides almost 5 times the training area. Airspace: Airspace is limited by the size of the installation range complex boundaries. Collective Range: JBLM-Main is primarily used to train individual through platoon live fire (company and below maneuver). Larger formations train at JBLM-YTC. JBLM-Main has only 2 platoon level live fire ranges, and both of those require mitigation due to the recent listing of three endangered species. Infrastructure: While JBLM does not have extensive erosion issues, maneuver trails and tank trails are in need of repair. C2 is also limited for higher level live and synthetic training to three Tactical Interface Point (TIP) sites providing connectivity.

Summary Observations

JBLM observed several encroachment related issues during this assessment. Munitions: Without costly ($9M) mitigation berms, the upcoming fielding of M855A1 ammunition will close ten small arms ranges and limit twelve others. Depleted uranium boxes closed the Light Anti-armor Weapon (LAW) range and restricted 40% of the artillery box to high explosive (HE) indirect fires. Threatened and Endangered Species: The recent listing of three species, and their associated habitat (both occupied and critical) limits off road maneuver, bivouacking, digging, and some air maneuver. Critical and occupied habitat occurs in open prairie maneuver areas and drop zones. Airspace: Restricted airspace (R6703) limits fire support assets. There are only two training areas where high angle Artillery can be fired (14,000 ft.). Additional training area is limited to 5,000 ft. of airspace. The addition of multiple UAS aircraft further limits rotary wing aircraft maneuver causing stringent control measures to ensure safety. Noise Restrictions: Population densities around JBLM have generated multiple noise complaints. Artillery and mortar firing is limited to the 0700–2200 timeframe daily unless an exception to firing is granted by the Installation Commander for required training. Cultural resources: Numerous sites of Native American culture still need to be examined and determined for registry.

Joint Base Lewis-McChord Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	7.67	7.67	6.56	8.33	8.33	**Encroachment Scores**	8.54	8.54	9.15	8.57	8.57
Range support manning is the primary factor diminishing the installation's capabilities within the range complex. With a TDA of only 16 personnel, range support cannot safely support 24/7 operations. The installation is working with IMCOM and the Department of the Army Management Office - Training and Simulations (DAMO-TRS) to find a remedy to increase range support personnel. Landspace is limited and larger unit formations and collective live fires and maneuvers are conducted at JBLM-YTC. Airspace is limited, both restricted airspace R6703, and within the confines of the installation. Attempts are being made to acquire rights to off-post training areas for rotary wing aircraft. Collective ranges do not have permanently installed targetry, and the recent listing of three species forces mitigation on our only two platoon live fire ranges. The remedy is ACUB and the completion of negotiations over the Biological Assessment between IMCOM and USFWS. Funding has been requested for maneuver and tank trail repairs. Additional connectivity could be provided by Harris Radios (examining for feasibility).						Encroachment pressures have increased due to the listing of three species, and the upcoming fielding of the M855A1 round. Mitigation for the endangered species includes ACUB funding to provide additional habitat off the installation, a Programmatic Biological Assessment (BA) for all training events occurring in occupied or critical habitat (currently in negotiation between IMCOM and USFWS), and deforestation to provide additional open maneuver areas outside of critical and occupied habitat. M855A1 ammunition is scheduled for fielding in FY2015. The ammunition increases penetration capabilities over the current lead ammunition, but also creates challenges for training utilization. The increased SDZ (primarily the ricochet portion of the SDZ) will cause several ranges to close, and several others to require limitations. Mitigation includes increased berms that will require approximately $9M to build.					

Joint Base Lewis-McChord Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Movement & Maneuver		Stryker brigades require huge footprints of land doctrinally. JBLM-Main has 68,000 acres of training land. The impact is minimal, as larger formations generally train at JBLM-YTC. There is no corrective action; JBLM was designed with both Main and YTC as complementary.
Airspace	Movement & Maneuver		Airspace, especially restricted airspace, is limited at JBLM-Main. Rotary wing training is competing for much of the same resource with UAS and artillery. An EA required for acquisition of off-Installation rotary wing training sites.
	Fire Support		Restricted Airspace R6703 does not provide for full spectrum indirect fire training. Only two training areas are capable of firing high angle indirect missions (up to 14,000 ft.). Only one additional training area available for indirect missions, and only to 5000 ft. There is no known resolution.
Targets	Movement & Maneuver		Several qualification ranges require upgrades to targetry as the data boxes fill with water. This will begin to effect training as data boxes will begin to fail. The remedy is to fund rebuild of targetry for those ranges (requested funding in RCMP and training budget). The cost is approximately $600K per range.
Range Support	Movement & Maneuver		There is an insufficient number of range support personnel to safely provide 24/7 coverage of the range complex. Training is not allowed while Range Support is closed, making certain long term training activities infeasible. The solution is to provide additional TDA authorizations for sufficient Range Support manning.
	Fire Support		Same as above.
	Intelligence		Same as above.
	Sustainment		Same as above.
	Command & Control		Same as above.
	Protection		Same as above.
Collective Ranges	Fire Support		Airspace does not support the full spectrum of collective fire support ranges. Only two training areas provide required airspace for high angle fire, and there is only one additional training area for any fire support. The solution is to request additional restricted airspace from FAA.

Figure 2-9 Army Capability and Encroachment Assessment Detail (continued)

Joint Base Lewis-McChord Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Movement & Maneuver	●	Three recently listed species occupy critical habitat within the range complex, limiting training events in those areas. Impacts to training are not finalized, but are expected to include no digging, no off-road maneuver, and no bivouacking in occupied or critical habitat. Remedies include ACUB, de-forestation of some training areas to provide open maneuver outside of occupied and critical habitat, and relocating training to other areas outside of critical or occupied habitat.
Airspace	Fire Support	●	Restricted Airspace R6703 does not provide for full spectrum indirect fire training. Only two training areas are capable of firing high angle indirect missions (up to 14,000 ft.), and only one additional training area is available for indirect missions up to 5,000 ft. There is no known resolution.
Noise Restrictions	Fire Support	●	Population densities surrounding the installation have resulted in numerous complaints about late night artillery and mortar live fire training. This limits the number and duration of night fire opportunism for indirect fire systems. Remedies have included approval by the installation commander for artillery and mortar firing between hours of 2200–0700 and notification of the local populace whenever late night firing will occur.
Cultural Resources	Movement & Maneuver	●	Numerous Native American cultural sites have been found at JBLM. No training occurs in known or suspected cultural sites. Remedies include researching sites to determine their cultural significance.

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Figure 2-9 Army Capability and Encroachment Assessment Detail (continued)

Fort Polk Assessment Details

Range Mission Description

The Joint Readiness Training Center (JRTC) and Fort Polk develops leaders, as it trains brigades and other units, special operations forces, and joint and interagency partners across the spectrum of conflict. It serves as an advocate for advancement by leading change in developing and integrating emerging organizations, equipment, technologies, and doctrine to support FORSCOM's ability to provide a sustained flow of trained and ready landpower to Combatant Commanders. When necessary, Fort Polk validates, deploys, and redeploys active, National Guard, and Army Reserve forces. The JRTC is a key part of the Army's Combat Training Centers (CTCs), and training at the JRTC is focused on Army light, airborne, and air assault forces. Designated as one of the Army's power projection platforms, the JRTC and Fort Polk are also home to the 4th Brigade Combat Team, 10th Mountain Division, 5th Aviation BN (P), 1st Maneuver Enhancement BDE (MEB), and 162nd SFAT, which consists of various combat, combat service, and combat service support units.

Capability Data

Mission Areas	Capability Attributes												
	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
Movement & Maneuver	PMC	PMC			FMC		FMC	FMC	FMC	PMC	FMC	FMC	
Fire Support	PMC	FMC			FMC		FMC	FMC	FMC		FMC	FMC	
Intelligence	FMC	FMC			FMC		FMC	FMC	FMC			FMC	
Sustainment	PMC							FMC	FMC		FMC	FMC	
Command & Control	FMC	FMC			FMC		FMC	FMC	FMC			FMC	
Protection	FMC				FMC		FMC	FMC	FMC		FMC	FMC	

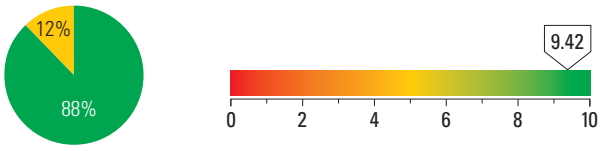
Legend: FMC, PMC, NMC

Encroachment Data

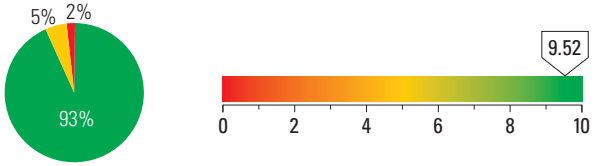
Mission Areas	Encroachment Factors											
	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Movement & Maneuver	Moderate		Minimal		Minimal	Minimal	Minimal	Minimal	Minimal		Moderate	Severe
Fire Support	Minimal		Minimal		Minimal	Minimal	Minimal	Minimal	Minimal		Minimal	
Intelligence	Minimal		Minimal		Minimal		Minimal	Minimal	Minimal		Minimal	
Sustainment	Minimal		Minimal					Minimal	Minimal		Minimal	
Command & Control	Minimal		Minimal		Minimal			Minimal	Minimal		Minimal	
Protection	Minimal		Minimal			Minimal	Minimal	Minimal	Minimal		Minimal	

Legend: Minimal, Moderate, Severe

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

Fort Polk has purchased 22,934 acres adjacent to Peason Ridge. Listed as Cold Springs and Kurthwood Training Areas, they are currently under development. The areas are limited to training with blank munitions up to 50 cal. The training areas have been used by rotational units, artillery units, and special forces. Training capabilities will increase with the improvements to the new training areas. Vegetative encroachment moderately impacts the training capability on Fort Polk, particularly within the Intensive Use Area, which is owned by the U.S. Forest Service.

Summary Observations

Approximately 606 trespass horses live on Fort Polk and Peason training lands and ranges and are increasingly becoming hazardous to airborne activities, maneuvers, live fire, and to land rehabilitation and maintenance activities. The Directorate of Public Works (DPW) Environmental and Natural Resources Management Division has attempted to dart and capture (6 horses total) animals but was unsuccessful. DPW continues this effort and is building three large corrals to trap and neuter/sterilize horses under an Environmental Assessment for Sterilization project with no additional funding. There is no mechanism to prevent release of animals onto government lands.

Fort Polk Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	8.73	8.73	7.94	9.33	9.33	**Encroachment Scores**	10.00	10.00	9.51	9.51	9.51
Capabilities have improved at Fort Polk since 2012. Range Support funding increased in FY2014; however, recent manpower reductions will cause a 20% cut in range operations starting in FY2016. A shortage of modernized Small Arms Ranges has continued to impact capability at Fort Polk; however, new range requirements have been documented and, if funding is available, capability should improve in the out years. Landspace continues to impact maneuver capability, but the purchase of additional training land will significantly improve this capability in the out years. Airspace capability will likely become a greater challenge into the outyears, as requirements to field new UAS systems increase.						Encroachment factors have not historically had a significant impact on the mission at Fort Polk. Minor to moderate impacts resulting from threatened and endangered species, the presence of feral horses, and wetlands have developed over the last two years, and are anticipated to result in continued impacts to maneuver training and live fire exercises in the out years. The installation is actively pursuing buffer initiatives through the Army Compatible Use Buffer (ACUB) Program to reduce existing impacts and prevent future impacts. Additionally, training land acquisition efforts should help to alleviate maneuver training impacts by providing additional maneuver land to meet training requirements.					

Fort Polk Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Movement & Maneuver	●	Much of the newly purchased land belonged to the timber industry and is densely planted. The undergrowth prevents cross country movement off trail in much of the area. Before this condition can be improved, DPW must establish permanent firebrakes around private properties within the training areas and along the boundaries. Once those firebrakes become permanent, DPW Forestry can thin the vegetation and implement a prescriptive burn plan. This is ongoing through the next several years as Fort Polk continues to purchase new properties.
	Fire Support	●	There is no restricted airspace established over the newly purchases lands. Without restricted airspace, Fort Polk cannot emplace indirect fire plans. The EA for restricted airspace was initiated as well as preliminary coordination with the FAA through the Department of Army Representative (DAR), estimated completion date is July 2016.
	Sustainment	●	On more than 40,000 acres of U.S. Forest Service lands, Fort Polk experiences vegetative encroachment due to the prolific growing season, fire tolerant vegetative species, and undermanned range maintenance staff. Line of sight becomes an issue on ranges and in impact areas. If left long enough, the area becomes viable foraging habitat for the RCW, an endangered species. Once the range maintenance plan EA is complete, areas not designated as habitat may be reclaimed. Estimated completion date is December 2014.
Airspace	Movement & Maneuver	●	The is no restricted airspace established over the newly purchases lands. Without restricted airspace, Fort Polk cannot integrate UAVs into training without manned chase helicopters. The EA for restricted airspace was initiated as well as preliminary coordination with the FAA through the Department of Army Representative (DAR) with an estimated completion date of July 2016.
Small Arms Range	Movement & Maneuver	●	There is no restricted airspace established over the newly purchased lands. Without restricted airspace, Fort Polk cannot emplace small arms, direct fire plans. The EA for restricted airspace was initiated as well as preliminary coordination with the FAA through the DAR with an estimated completion date of July 2016.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Movement & Maneuver	●	The Red Cockaded Woodpecker is present and well protected on Fort Polk. Colonies occur throughout the maneuver lands and are well marked. The Louisiana Pine Snake (LPS) has recently been listed as a candidate species by the State of Louisiana. At this time there are no restrictions to training to protect the LPS. The potential for restrictions to sustainable maintenance down range is an issue. A Candidate Conservation Agreement is in place and provides protection of the LPS.
Wetlands	Movement & Maneuver	●	Wetlands and large streams abound within the newly purchased lands, requiring permits to construct low water crossings for military traffic. Several major streams run through the installation that are considered National Scenic Streams and are protected upstream on the training lands with low water crossing that allow vehicular traffic without disturbing the streams. Impacts to training are decreasing and will continue to do so as secondary streams are being hardened with aggregate and/or culvert systems to preserve stream integrity and prevent siltation. The intense protection of streams is ongoing.

Figure 2-9 Army Capability and Encroachment Assessment Detail (continued)

Fort Polk Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Range Transients	Movement & Maneuver		Range transients on Fort Polk include trespass horses and feral hogs. Both transients interfere with training activities and revegetation projects. The equine populations on Main Post and Peason Ridge are estimated at 329 and 268, respectively. Historically animals have been caught in concertina wire, killed/injured by air dropped cargo, and frequently must be chased away from training activities and off live fire ranges. The trespass horses have caused damages to the ground cover in maneuver lands, within villages and down range. Revegetation projects are impeded by heavy grazing of cover crop and grass seedlings. DPW Environmental and Natural Resources Management Division (with no additional funding) have the lead on trespass horse removal and are in the process of building corrals to capture and sterilization. Until proven successful in reducing the populations over time and given an estimated life span of 25–30 years, their negative effects remain a constant challenge. Feral hogs are capable of uprooting large areas as they root for resources. The damages are similar to pivot steers by a tracked vehicle in depth and area. There is an open season on the feral hogs off the installation but on the Fort Polk Wildlife Management Area, they can only be hunted during the big game season.

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Figure 2-9 Army Capability and Encroachment Assessment Detail (continued)

Fort Riley Assessment Details

Range Mission Description

Fort Riley provides live fire and maneuver planning, execution, and sustainment support to elements of the 1st Infantry Division comprised of heavy, light, aviation, and sustainment formations. In addition Fort Riley, supports multiple Reserve Component units along with joint, interagency, inter-governmental, and multinational (JIIM) partners. Fort Riley range complexes and maneuver areas are capable of supporting the full spectrum of Army Force Generation (ARFORGEN) and JIIM training requirements.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Movement & Maneuver	PMC	FMC			PMC	FMC	FMC	FMC	PMC	PMC	FMC	FMC	PMC
Fire Support	FMC	FMC			PMC	FMC	FMC	FMC	PMC		FMC		FMC
Intelligence	FMC	FMC			FMC	FMC		FMC	FMC		FMC		FMC
Sustainment	FMC	FMC			FMC	FMC		FMC	FMC	FMC	FMC	FMC	FMC
Command & Control	FMC	FMC			FMC	FMC		FMC	FMC	FMC	FMC	FMC	FMC
Protection	FMC	FMC			FMC	FMC		FMC	FMC	FMC	FMC	FMC	FMC

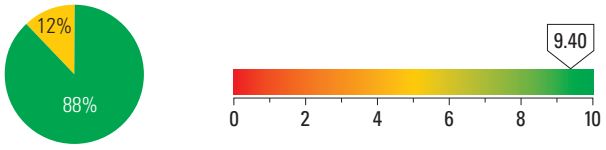
Legend: FMC PMC NMC

Encroachment Data

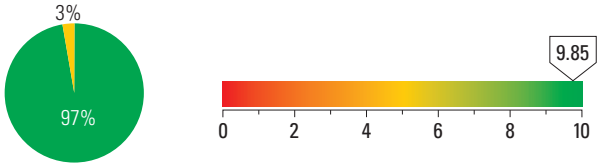
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Movement & Maneuver	Minimal	Minimal	Minimal		Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Fire Support	Minimal	Moderate	Minimal		Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Intelligence	Minimal	Minimal	Minimal		Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Sustainment	Minimal	Minimal	Minimal		Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Command & Control	Minimal	Minimal	Minimal		Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Protection	Minimal	Minimal	Minimal		Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate

Legend: Minimal Moderate Severe

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

Fort Riley provides facilities to support live fire and maneuver exercises; however, Fort Riley Range Operations are authorized at only 43% of the required Department of the Army Civilians (DACs) positions, and does not have access to additional contract personnel to provide range services. Impact to training is currently limited but potential for increased impacts to training is high due to an increase in Operational Tempo (optempo) resulting from a return to full spectrum fire and maneuver training at home station. Fort Riley Range Operations is currently mitigating impacts from reduced manpower through the use of borrowed military manpower, but a rebalance and re-distribution of Range Operations DACs and supporting contractors between installations is required in order to ensure a consistent Common Level of Support (CLS) across the Army Sustainable Range Program.

Summary Observations

Fort Riley currently experiences minimal encroachment-related issues. The installation is bordered along three sides with natural waterways and lakes limiting development along major parts of the installation boundary. In addition to a robust ACUB program, Fort Riley has developed close relationships with federal, state, regional, county, and local planning officials in order to discourage incompatible development.

Fort Riley Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	6.33	6.33	8.22	9.17	9.17	**Encroachment Scores**	10.00	10.00	9.55	9.55	9.55
As a result of significant Military Construction (MILCON) projects during the past seven years, Fort Riley is well postured for facilities to support all live fire and maneuver training events. Reductions in DACs and a lack of Range Operations service contracts, in conjunction with an increase in optempo, will result in a decrease in Fort Riley's calculated overall Capability Score in future years.						Encroachment factors have historically had almost no impact on the mission at Fort Riley. Minimal impacts resulting from the Adjacent Land Use factors have increased over the last two years, and have had some minor impacts on the mission. The installation is currently working with FAA to resolve issues involving UAS and rotary wing aircraft operating within the restricted area. This should help to mitigate potential impacts moving forward, and prevent this encroachment factor from having increased impacts in the future.					

Fort Riley Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Movement & Maneuver	●	DAC authorizations for the Fort Riley Installation Training Area Management (ITAM) program have been reduced from 7 to 1, severely limiting the ability to conduct Land Rehabilitation and Maintenance (LRAM) activities. Secretary of the Army (SecArmy) policy decisions prohibit Fort Riley from contracting ITAM support (seen as replacing DAC reductions with contracted personnel). The impact to training is currently minimal due to the use of Borrowed Military Manpower (BMM) and support from Reserve Component Engineer Units to mitigate maneuver area safety hazards, but potential for increased impacts to training is high unless the Fort Riley ITAM program is restored either through the re-distribution of DAC authorizations or an exception to SecArmy contract policy. Fort Riley has requested, with IMCOM Central Region Director support, the hiring of four employees in order to sustain the ITAM program until a full resolution is achieved.
Targets	Movement & Maneuver	●	Fort Riley Range Operations authorized only 43% of required DACs positions, severely limiting that ability to sustain and maintain targets within the ranges complexes and maneuver areas. There is currently limited impact to training due to the use of BMM to mitigate, but potential for increased impacts to training is high due to an increase in optempo resulting from a return to full spectrum fire and maneuver training at home station. A rebalance and re-distribution of Range Operations DAC and supporting contractors between installations is required in order to ensure a consistent CLS across the Army Sustainable Range Program.
	Fire Support	●	Same as above.
Range Support	Movement & Maneuver	●	Same as above.
	Fire Support	●	Same as above.
Small Arms Range	Movement & Maneuver	●	Same as above.
Suite of Ranges	Movement & Maneuver	●	MILCON of the Fort Riley Infantry Platoon Battle Course (IPBC) was cut due to budget reductions. There is currently minimal impact to training as the requirement is mitigated through the use of mobile radio controlled targetry. Fort Riley has resubmitted this MILCON project through the Sustainable Range Program for refunding consideration.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Munitions Restrictions	Fire Support	●	Fort Riley is unable to fire white phosphorus (WP) in the vicinity of Seven Mile Creek within the impact area due to runoff concerns. There is currently minimal impact to training. Mitigation is ongoing through the use of alternate targets within the impact area.
Airspace	Intelligence	●	Restrictions to due to proximity to national airspace, Class D airspace and commercial air routes associated with a regional commercial airport. Minimal impact to training with less than 10% of Fort Riley restricted airspace (R3602B) affected. Mitigation is ongoing through Fort Riley Air Traffic Control (ATC) coordination with civil airport authorities.

Figure 2-9 Army Capability and Encroachment Assessment Detail (continued)

Fort Stewart Assessment Details

Range Mission Description

Fort Stewart and Hunter Army Airfield are the Army's world-class training and military armored power projection combination on the eastern seaboard of the United States. This dynamic platform allows military units in the region to deploy rapidly throughout the world. The installation operates and maintains 242,000 acres available for quality live fire and maneuver training. Military readiness, training land stewardship, and environmental compliance are priority for Fort Stewart's range operations. Live fire ranges are capable of supporting small arms, field artillery, aerial and tank gunnery. Maneuver training adheres to the tenants of the Army Campaign Plan for Sustainability.

Major units that train at Fort Stewart are the 3rd Infantry Division, the 92nd Engineer Battalion, the 38th Explosive Ordnance Detachment, and the 385th Military Police Battalion. Other tenant units and organizations that train on Fort Stewart are the NCO Academy / Warrior Leader Course, 188th Infantry Brigade, 1st Battalion- 75th Ranger Regiment, 3rd Battalion-160th Special Operations Aviation Regiment, 95th Maintenance, Aviation and Missile Command (AMCOM) Project OLR (East), the Special Forces Recruiting Team, and multiple Air Force, Coast Guard, and reserve component units.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
Movement & Maneuver	PMC	FMC			FMC		FMC	FMC	NMC	NMC	NMC	FMC	
Fire Support	FMC	FMC			FMC		FMC	FMC	NMC		NMC	FMC	
Intelligence	FMC	FMC			FMC		FMC	FMC	NMC			FMC	
Sustainment	PMC							FMC	NMC		NMC	FMC	
Command & Control	FMC	FMC			FMC		FMC	FMC	NMC			FMC	
Protection	FMC				FMC		FMC	FMC	NMC		NMC	FMC	

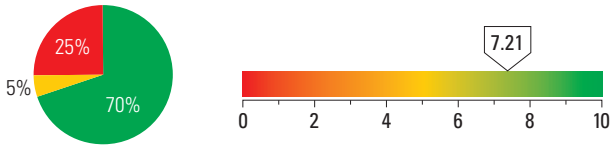
Legend: FMC PMC NMC

Encroachment Data

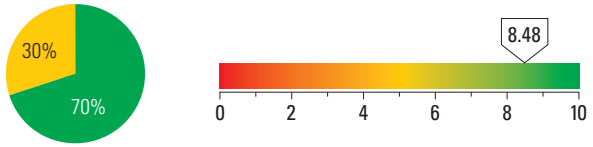
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Movement & Maneuver	Minimal	Minimal	Moderate		Moderate	Minimal	Minimal	Minimal	Moderate	Minimal	Moderate	Minimal
Fire Support	Minimal	Minimal	Moderate		Moderate	Minimal	Minimal	Minimal	Moderate	Minimal	Moderate	Minimal
Intelligence	Minimal	Minimal	Moderate		Moderate	Minimal	Minimal	Minimal	Minimal	Minimal	Moderate	Minimal
Sustainment	Minimal	Minimal	Moderate		Moderate	Minimal	Minimal	Minimal	Minimal	Minimal	Moderate	Minimal
Command & Control	Minimal	Minimal	Moderate		Moderate	Minimal	Minimal	Minimal	Minimal	Minimal	Moderate	Minimal
Protection	Minimal	Minimal	Moderate		Moderate	Minimal	Minimal	Minimal	Minimal	Minimal	Moderate	Minimal

Legend: Minimal Moderate Severe

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

Fort Stewart's critical shortfall is four infantry squad battle courses and a machine gun range that affect Movement and Maneuver. Current construction efforts will improve the range complex capabilities. All the ranges are required in accordance with the Army Range Requirements Model (ARRM) based on current force structure.

Summary Observations

Currently 100% of field training exercises (FTX) require a minor work around at Fort Stewart. The mission areas most affected are Movement and Maneuver and Fire Support for the following Encroachment Factors: Spectrum, Airspace, Cultural Resources, and Wetlands. All remaining mission areas are affected for the same factors with the exception of Cultural Resources. Currently Fort Stewart is short 179,000 acres for Movement and Maneuver. Currently the majority of training areas have vegetation concerns due to tree density and understory; however, Fort Stewart has an active timber harvest and burn program to address this issue. With the removal of restriction on RCW in maneuver areas, there is negotiable impact due to Threatened and Endangered Species. Traffic issues due to wetlands pose a concern given the acreage of wetlands on the installation; however with the program of low water crossings and road network, this is mitigated so that impacts are moderate. This issue is separate from the issue of wetland and range construction, where wetland credits and mitigation are needed for any construction project.

Fort Stewart Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	6.33	6.33	6.89	8.81	9.40	**Encroachment Scores**	9.17	9.17	8.61	7.72	7.72
As a Tier 1 installation that supported heavy forces, Fort Stewart has traditionally focused its range upgrade program to tank and bradley ranges. The conversion of an HBCT to an IBCT has split focus into one of supporting predeployment and mobilization preparation of all forces with a greater emphasis on basic infantry skills; (individual and crew qualifications with small arms in support of small unit operations (sqd/plt)) while maintaining and upgrading our capability to support heavy tank and bradley gunnery. Fort Stewart struggles to keep pace with the increased requirements placed upon it from ARFORGEN and modularity. The installation assumes risk due to incomplete and inadequate facilities for the growing mission and population. Fort Stewart does not have the training support facilities, manpower, funding or equipment necessary to support current or future force levels. Modern training facilities are critical to train the force for successive deployments as part of ARFORGEN.						The potential listing of the Gopher Tortoise and the Striped Newt as endangered species would have a moderate to significant impact on training. This is unlikely to occur in the next five years, but the Army must remain actively engaged in regional conservation efforts to prevent such listing.					

Fort Stewart Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Movement & Maneuver	🟡	Fort Stewart has a doctrinal training land shortfall per AR 350-19. Fort Stewart's doctrinal shortage of 179,000 acres of light and heavy maneuver land limits the realism of training. Units are not able to train in the required "battle space" as real world missions dictate. Combat operations, command and control and logistical requirements are not realistic, thus limiting the "Train as we Fight" concept of training. Currently there are no actions or plans to increase maneuver space.
	Sustainment	🟡	Same as above.
Range Support	Movement & Maneuver	🔴	Non-salary range operation funding is 25% below the Army critical requirement. This limits installation support for short-term training requests, range reconfiguration projects to support emerging tactics/techniques and procedures, and preventative maintenance. There is no anticipated increase in funding levels. Range support will be limited to repair critical range operations functions and equipment. Range reconfiguration projects will not be completed without outside funding. Non tenant organizations will pay operation and maintenance cost for use of range facilities.
	Fire Support	🔴	Same as above.
	Intelligence	🔴	Same as above.
	Sustainment	🔴	Same as above.
	Command & Control	🔴	Same as above.
	Protection	🔴	Same as above.
Small Arms Ranges	Movement & Maneuver	🔴	There is a deficit of machine gun range upgrades and infantry platoon/squad ranges. Fort Stewart's machine gun range currently does not meet the training requirements as outlined in TC 25-8. Training throughput requirements (as directed by the ARRM) call for a total of 5 machine gun ranges. Infantry plt/sqd ranges are a critical shortage on Fort Stewart. The requirement is for 2/4 each respectively. Without these facilities soldiers cannot perform the collective tasks required of basic combat units. This leaves Fort Stewart with a throughput issue and an inability to meet "to standard" training requirements during deployments preparations and mobilizations. There are no plans to upgrade the current range to TC 25-8 standards. There are currently no plans to construct enough ranges to meet throughput requirements.
Collective Ranges	Movement & Maneuver	🔴	There is a deficit of infantry platoon/squad ranges. Fort Stewart is authorized 4 ISBC and 2 IPBC. There is one IPBC that currently does not meet the training requirements as outlined in TC25-8, and one IPBC being constructed. With the conversion of an HBCT to an IBCT, with more light Infantry soldiers and longer dwell time between combat rotations throughput requirements for these facilities will increase. There continues to be no infantry squad live fire facility for the 3rd ID, 1-75 Ranger Regiment and other deployed and contingency expeditionary forces. There are135 infantry squads organic to Fort Stewart and the installation cannot meet their "to standard" training needs. The revised FYDP through FY2016 leaves Fort Stewart with a shortage of 4 ISBC and none scheduled for the out years. Fort Stewart has no ISBCs on the ground. These training shortfalls are being addressed in the Senior Commanders Installation Needs and Issues (SCINI) report to Department of the Army. There is no anticipated remedy date.
	Fire Support	🔴	Same as above.
	Sustainment	🔴	Same as above.
	Protection	🔴	Same as above.

Figure 2-9 Army Capability and Encroachment Assessment Detail (continued)

Fort Stewart Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Spectrum	Movement & Maneuver	●	Electromagnetic encroachment due to objective force modernization and increased demand for government and commercial wireless communications is of great concern; spectrum availability also impacts power projection support, first responders, and crisis management activities. Current spectrum challenges include the encroachment of range targetry control systems by radios used by units training in the field, and crowding and overlapping of the RF bands used by Land Mobile Radio and some UAV control systems. The installation Network Enterprise Center/Director of Information Management is hiring and equipping a full time spectrum manager to mitigate these impacts.
	Fire Support	●	Same as above.
	Intelligence	●	Same as above.
	Sustainment	●	Same as above.
	Command & Control	●	Same as above.
	Protection	●	Same as above.
Airspace	Movement & Maneuver	●	New FAA requirements for Savannah Approach has encroached 6 nautical miles inside the installation boundary across the northern boundary of the installation. The affected area is a box approximately 23 KM east/west by 12KM North/South over the northern portion of post. This affects the training of units equipped with UAS systems. Due to the new requirements, there is no flight of UAS systems in the affected area. Fort Stewart is working with the FAA to mitigate this loss.
	Fire Support	●	Same as above.
	Intelligence	●	Same as above.
	Sustainment	●	Same as above.
	Command & Control	●	Same as above.
	Protection	●	Same as above.
Cultural Resources	Movement & Maneuver	●	There are 198 protected sites and cemeteries that occupy 829 acres of land restricted to training. No training is allowed in the 829 acres. The Army continues to work to mitigate these restrictions.
	Fire Support	●	Same as above.
Wetlands	Movement & Maneuver	●	Approximately 1/3 of Fort Stewart is wetlands (≈91,000 acres). New ranges and other construction are currently planned through FY2014 and will considerably elevate the training capability of the installation. Traffic ability issues due to nature of wetlands pose a concern; however with the program of low water crossings and road network, this is mitigated so impacts are minor. This issue is separate from the issue of wetland and range construction where wetland credits and mitigation are needed for any construction project. Additional wetland areas are being purchased to mitigate wetland impact from future range construction projects.
	Fire Support	●	Same as above.
	Intelligence	●	Same as above.
	Sustainment	●	Same as above.
	Command & Control	●	Same as above.
	Protection	●	Same as above.

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Figure 2-9 Army Capability and Encroachment Assessment Detail (continued)

Fort Wainwright Assessment Details

Range Mission Description

Fort Wainwright (FWA) supports home station individual and collective training for the 1/25th Stryker Brigade Combat Team and the 16th Combat Aviation Brigade. The Donnelly Training Area (DTA), a sub-installation of FWA, supports collective training for not only the two resident brigades, but also the 4/25th Airborne Brigade Combat Team and the 3rd Maneuver Enhancement Brigade from Fort Richardson. FWA and DTA supports a wide variety of Air Force, allied and multi-national training during major flying exercises and sustainment training. U.S. Federal agencies, National Guard and Reserve units also use the Fort Wainwright ranges for qualification and sustainment training. Additionally, the Cold Regions Test Center uses these training areas for RDT&E test items.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Movement & Maneuver	●	●			●	●	●	●	●	●	●	●	●
Fire Support	●	●			●	●	●	●	●		●	●	●
Intelligence	●	●			●		●	●				●	●
Sustainment	●	●			●	●		●	●	●	●	●	●
Command & Control	●				●		●	●				●	●
Protection	●				●		●	●		●	●	●	●

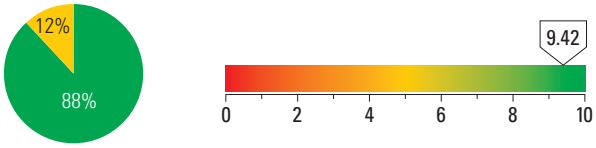
Legend: FMC ● PMC ● NMC ●

Encroachment Data

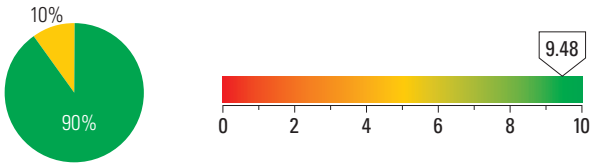
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Movement & Maneuver	●	●	●		●		●	●	●	●	●	●
Fire Support	●	●	●		●		●	●	●	●	●	●
Intelligence	●		●		●		●	●	●	●		●
Sustainment	●		●		●		●	●	●	●	●	●
Command & Control	●		●				●	●	●			
Protection	●	●	●				●	●	●			

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

The most adverse impact to mission is caused by outdated smalls arms ranges and infrastructure shortfalls. While several mission areas are impacted by capability shortfalls, Movement and Maneuver and Sustainment are the most severely impacted, due to poor training area road infrastructure, and small arms ranges at the end of their lifespan.

Summary Observations

There is a moderate impact to the mission areas due to encroachment factors. The most significant impacts are caused by Munitions Restrictions, Airspace, Wetlands, and Range Transients. The Mission Areas that are most impacted are Movement and Maneuver, Fire Support, and Sustainment. Movement and Maneuver are impacted due to restrictions on munitions usage based on fire weather index constraints; uncontrolled aircraft operating over Army owned training land; constrained activities and restricted access to areas based on location and type of wetlands; and prohibitions on firing due to wildlife on the ranges and uncontrolled aircraft over the ranges. Each impact results in training delays or reduced training opportunities.

Fort Wainwright Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	8.22	8.22	8.00	8.93	9.17	**Encroachment Scores**	8.46	8.46	9.00	9.35	9.35
There is a lack of restricted airspace to support UAS vehicle take-off and landing. This restricts UAS operations to daylight hours only if operating over Army lands which are in the National Airspace, but not under restricted airspace. There are uncontrolled aircraft operating over Army owned training lands outside of restricted airspace. This leads to regular cease fires for live fire training. The road infrastructure does not provide suitable driving conditions for modern fighting vehicles. Road infrastructure projects were submitted to address this situation. Historically, road improvement projects have been underfunded. Small arms ranges are currently programmed for modernization to prevent equipment failure during critical reset times. Small arms range modernization and re-vitalization projects are identified in the Range Complex Master Plan.						Encroachment factors have historically had a moderate impact on the mission at Fort Wainwright and Donnelly Training Area, but they have increased slightly this year. The installation has been able to manage and mitigate many encroachment impacts. The installation is working to expand restricted airspace to reduce the airspace encroachment on the training mission. The Final Joint Pacific Alaska Range Complex (JPARC) EIS will accompany the installation's airspace expansion request to the FAA. The completion of the Tanana River Bridge will provide access to areas of the Tanana Flats that were previously inaccessible by ground. Wetlands will significantly impact the ability to develop access routes into this area. Fire Weather Index restrictions on munitions use remains a constant constraint to training during the fire season (April – September).					

Fort Wainwright Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Airspace	Movement & Maneuver	●	There is a lack of restricted airspace to support UAS vehicle take-off and landing. This restricts UAS operations to daylight hours only if operating over Army lands which are in the National Airspace, but not under restricted airspace. The support UAS units can provide home station elements during consolidated training events is reduced. There are uncontrolled aircraft operating over Army owned training lands outside of restricted airspace. This leads to regular cease fires for live fire training. The installation is seeking to expand the area of restricted airspace. The final JPARC EIS will accompany an airspace expansion request to the Federal Aviation Administration.
	Fire Support	●	Same as above.
	Intelligence	●	Same as above.
Small Arms Ranges	Movement & Maneuver	●	Small arms ranges are reaching the end of their lifespan and are currently programmed for modernization. The timetable for modernization must be maintained or there is a risk of equipment failure at critical reset times. Training requirements have to be met using workaround solutions on aging ranges. Modernization and re-vitalization projects are identified in the Range Complex Master Plan. Projects require support and funding in order to meet training throughput requirements. This is an enduring effort.
	Sustainment	●	Same as above.
	Protection	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Munitions Restrictions	Movement & Maneuver	●	The two types of munitions restrictions are due to wetlands (munitions containing phosphorus or perchlorate), and weather based on the Fire Weather Index (FWI). Restrictions due to wetlands are mandated throughout the Army. Significant portions of the impact areas are in wetlands. These munitions are restricted to upland areas only. The FWI indicates the probability that a fire will start based on environmental conditions. Under HIGH and EXTREME FWIs, which occur frequently throughout the summer, munitions use is limited primarily to ball and blank ammunition; all other munitions will start a fire and are restricted from use.
	Fire Support	●	Same as above.
Wetlands	Movement & Maneuver	●	A significant portion of withdrawn lands is classified as wetlands. This encroaches on both the use of munitions in the impact areas and on the ability of the units to fully use the land area for training. Improvements to training area access will be more costly due to the requirements to mitigate any disturbance of the wetlands, and rerouting to avoid the wetlands.
	Fire Support	●	Same as above.
	Sustainment	●	Same as above.

Figure 2-9 Army Capability and Encroachment Assessment Detail (continued)

Yakima Training Center Assessment Details

Range Mission Description

Yakima Training Center (YTC) provides training land and ranges for FORSCOM, SOCOM, Air Force, and non-tenant Armed Forces. The range complex supports daily ground and air combat training including small arms ranges, maneuver ranges, drop zones, maneuver training areas, restricted airspace, and facilities (such as CACTF). Primary users include I Corps, 7ID, 1st Special Forces Group, 2nd Battalion/75th Rangers, 62nd Airlift Wing, and Washington National Guard.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Movement & Maneuver	🟡	🟡			🟡	🟢	🟢	🟢	🔴	🟢	🟡	🟢	🟢
Fire Support	🟢	🟡			🟢		🟢	🟢	🔴	🟢	🟡	🟢	🟢
Intelligence	🟢						🟢	🟢	🔴	🟢	🟢	🟢	🟢
Sustainment	🟢	🟢			🟢		🟢	🟡	🔴	🟢	🟢	🟢	🟢
Command & Control	🟢						🟢	🟡	🔴	🟢	🟢	🟢	🟢
Protection	🟢						🟢	🟢	🔴	🟢	🟢	🟢	🟢

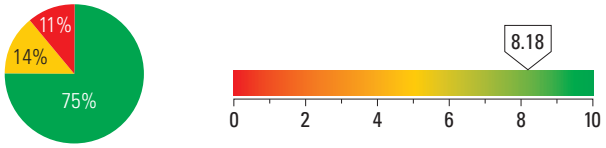
Legend: FMC 🟢 PMC 🟡 NMC 🔴

Encroachment Data

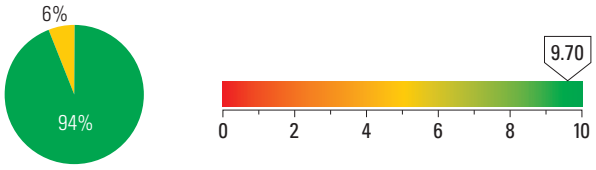
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Movement & Maneuver	🟡	🟢	🟢		🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢
Fire Support	🟡	🟡	🟢		🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢
Intelligence	🟢	🟢	🟢		🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢
Sustainment	🟡	🟢	🟢		🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢
Command & Control	🟢	🟢	🟢		🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢
Protection	🟢	🟢	🟢		🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢

Legend: Minimal 🟢 Moderate 🟡 Severe 🔴

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

YTC observed the following issues related to capability. The current Table of Distribution and Analysis (TDA) for range support is 16 authorized personnel for YTC, the third largest Army Installation in the United States. Range Support does not have the personnel required to provide 24/7 hours of operation to safety standards. JBLM-Main Range Complex is 68,000 acres. Although this is insufficient for the customer base, especially stryker brigades, most battalion and above training is conducted at JBLM-YTC, which provides almost five times the training area. Airspace is limited by the size of the installation range complex boundaries. JBLM-Main is primarily used to train individual through platoon live fire (company and below maneuver), while larger formations train at JBLM-YTC. JBLM-Main has only two platoon level. While JBLM does not have extensive erosion issues, maneuver trails and tank trails are in need of repair. Additionally, C2 is limited for higher level live and synthetic training to 3 Tactical Interface Point (TIP) sites providing connectivity.

Summary Observations

YTC observed several encroachment related issues during this assessment. Munitions: The closure of depleted uranium boxes restricts the artillery box to high explosive (HE) indirect fires. Endangered Species: Three species, and their associated habitat (both occupied and critical) limits off road maneuver, bivouacking, digging, and some air maneuver. Airspace: Restricted airspace (R6703) limits fire support assets. There are only two training areas where high angle artillery can be fired (14,000 ft). Additional training area is limited to 5,000 ft of airspace. The addition of multiple UAS aircraft further limits rotary wing aircraft maneuver causing stringent control measures to ensure safety. Noise Restrictions: Low population densities around YTC's geographic location, not in proximity to population centers, means there are minimal encroachment issues due to urbanization. There are, however, several noise sensitive areas (surrounding rural communities) that pertain to aviation. Cultural resources: Numerous sites of Native American culture still need to be examined and determined for registry.

Yakima Training Center Assessment Details

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Capability Scores	6.89	6.89	8.22	9.52	9.52
Range Support manning is the primary factor diminishing the installation's capabilities within the range complex. With a TDA of only 16 personnel, Range Support cannot safely support 24/7 operations. The installation is working with IMCOM and DAMO-TRS to find remedy to increase Range Support personnel. Landspace is limited; larger unit formations and collective live fires and maneuvers are conducted at JBLM-YTC. Airspace is limited, both restricted airspace R6703, and within the confines of the installation. Attempts are being made to acquire rights to off-post training areas for rotary wing aircraft. Collective Ranges do not have permanently installed targetry, and the recent listing of three species forces mitigations on the only two platoon live fire ranges. The remedy is ACUB and the completion of negotiations over the BA between IMCOM and USF&W. Money has been requested for maneuver and tank trail repairs. Additional connectivity could be provided by Harris Radios (Army is analyzing for feasibility).					

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Encroachment Scores	8.90	8.90	9.02	9.15	9.15
Encroachment pressures have increased due to the listing of three species, and the upcoming fielding of the M855A1 round. Mitigations for the endangered species include ACUB funding to provide additional habitat off the installation, a Programmatic Biological Assessment (BA) for all training events occurring in occupied or critical habitat (currently in negotiation between IMCOM and USFWS), and deforestation to provide additional open maneuver areas outside of critical and occupied habitat. M855A1 ammunition is scheduled for fielding in FY2015. The ammunition increases penetration capabilities over the current lead ammunition, but also creates challenges for training utilization.					

Yakima Training Center Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Movement & Maneuver	🟡	Stryker brigades require huge footprints of land doctrinally. JBLM-Main has 68,000 acres of training land. Impact is minimal, as larger formations generally train at JBLM-YTC. There is no action; JBLM was designed with both JBLM-Main and JBLM-YTC as complementary.
Airspace	Movement & Maneuver	🟡	Airspace, especially restricted airspace, is limited at JBLM-Main. Rotary wing training is competing for much of the same resource with UAS and artillery. An EA is required for acquisition of off-installation rotary wing training sites.
	Fire Support	🟡	Restricted Airspace R6703 does not provide for full spectrum indirect fire training. Only two training areas are capable of firing high angle indirect missions (up to 14,000 ft.). Only one additional training area available for indirect missions, and only to 5000 ft. There is no known solution.
Targets	Movement & Maneuver	🟡	Several qualification ranges require upgrade to targetry as the data boxes fill with water. This will begin to effect training as data boxes will begin to fail. The remedy is to fund rebuild of targetry for those ranges (requested funding in Range Complex Management Plan and Training Budget). The cost is approximately $600K per range.
Infrastructure	Sustainment	🟡	Maneuver and tank trails are in disrepair. Vehicles must navigate wide portions and potholes. Funding has been requested for maneuver and tank trail repair.
	Command & Control	🟡	Live and synthetic architecture is insufficient and results in limited connectivity for live and synthetic. The solution would be to fund for Harris radios; the Army is conducting a feasibility study.
Range Support	Movement & Maneuver	🔴	There is insufficient range support personnel to safely provide 24/7 coverage of the range complex. Training is not allowed while Range Support is closed, making certain long term training activities infeasible. The solution is to provide additional TDA authorizations for sufficient Range Support manning.
	Fire Support	🔴	Same as above.
	Intelligence	🔴	Same as above.
	Sustainment	🔴	Same as above.
	Command & Control	🔴	Same as above.
	Protection	🔴	Same as above.
Collective Ranges	Movement & Maneuver	🟡	There is a limited number of platoon level live fire ranges, and both have environmental issues. Environmental concerns must be mitigated, providing loss of realism. Solutions include ACUB and biological assessment negotiations.
	Fire Support	🟡	Airspace does not support full spectrum collective fire support ranges. Only two training areas provide required airspace for high angle fire, and only one additional training area for any fire support. The solution is to request additional restricted airspace from FAA.

Figure 2-9 Army Capability and Encroachment Assessment Detail (continued)

Yakima Training Center Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Movement & Maneuver	●	Three recently listed species occupy critical habitat within the range complex, limiting training events in those areas. Impacts to training are not finalized, but are expected to include no digging, no off-road maneuver, and no bivouacking in occupied or critical habitat. Remedies include ACUB, de-forestation of some training areas to provide open maneuver outside of occupied and critical habitat, and relocating training to other areas outside of critical or occupied habitat.
	Fire Support	●	Three recently listed species occupy critical habitat within the range complex, limiting training events in those areas. Impacts to training are not finalized, but are expected to include limited hours and seasons available for Fire Support activities. Remedies include utilizing areas outside of protection areas as necessary.
	Sustainment	●	Intact shrub-steppe communities can sustain the training mission, but once disturbed, they are fragile and require significant effort to re-establish. Once the native vegetation community is impacted or partially removed, the area becomes susceptible to erosion. Loamy/sandy soil types found on the installation, once exposed, wash or blow away quickly. Ruts and gullies created by erosion events increase training hazards, impede access, and can cause parts of training areas to be unusable until repairs can occur (2011 Range and Training Land Assessment (RTLA) Plan). The ITAM Program is a significant proponent of training land sustainability. A primary goal is to provide maneuver land capability to support the training mission requirements.
Munitions Restrictions	Fire Support	●	Depleted uranium was fired at YTC in the 1960's; the residue from this creates hazards and restrictions on HE rounds within the boxes. This limits HE fires for indirect fire weapons to outside of those boxes and the closure of R14. The installation is currently working with the Nuclear Regulatory Commission to license the areas, so that clean up can begin.

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Table 2-3 Army Range Capability and Encroachment Assessment Comparison

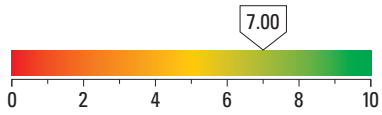
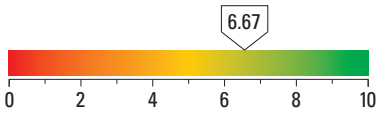
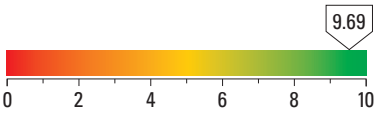
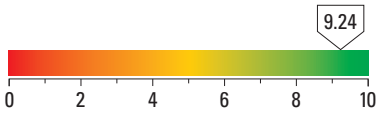
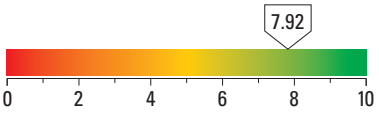
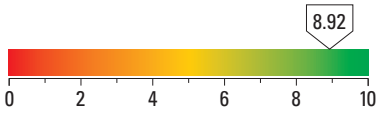
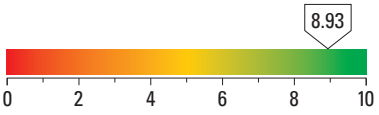
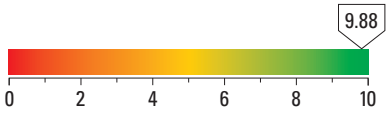
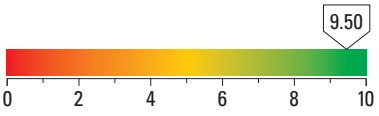
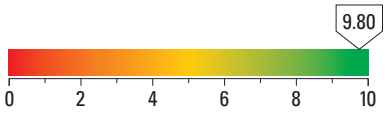
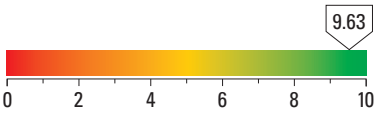
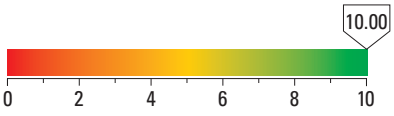
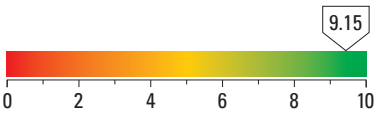
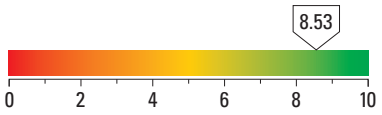
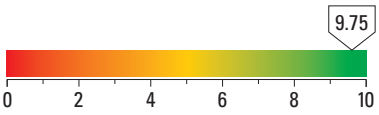
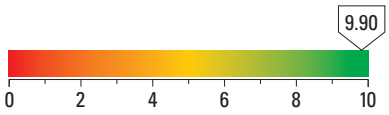
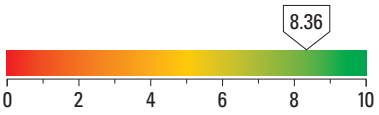
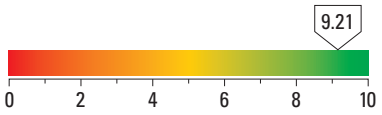
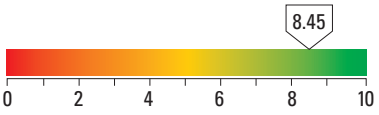
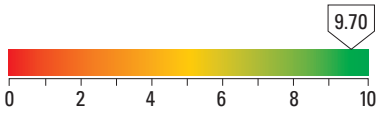
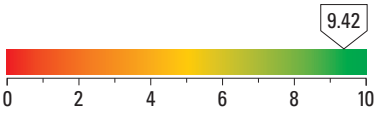
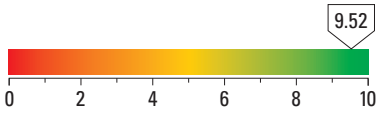
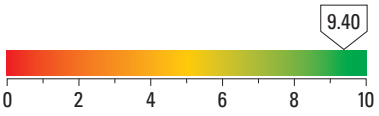
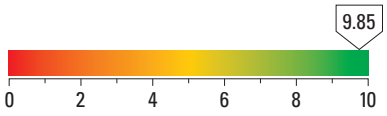
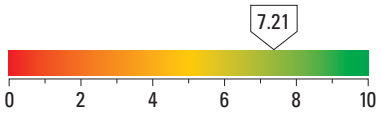
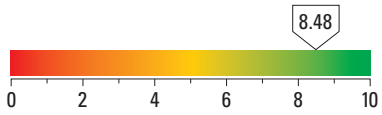
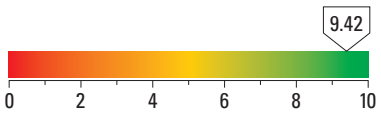
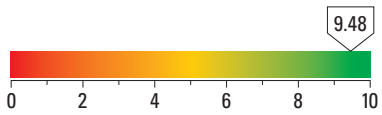
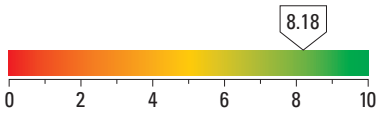
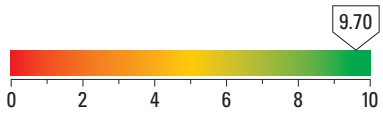
Range Name	Capability Score	Encroachment Score
Fort Benning		
Fort Bliss		
Fort Bragg/Camp Mackall		
Fort Campbell		
Fort Carson and Pinon Canyon Maneuver Site		
Fort Drum		
Hawaii		
Fort Hood		
Fort Irwin		
Joint Base Lewis-McChord		
Fort Polk		
Fort Riley		

Table 2-3 Army Range Capability and Encroachment Assessment Comparison (continued)

Range Name	Capability Score	Encroachment Score
Fort Stewart		
Fort Wainwright		
Yakima Training Center		

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2.2.2 MARINE CORPS RANGE ASSESSMENTS

Table 2-4 Marine Corps Capability Assessment Data Summary

Range	NMC	PMC	FMC	Capability Scores
MCAS Beaufort/Townsend	0	6	8	7.86
MCMWTC Bridgeport	0	8	0	5.00
MCIPAC-MCB Butler	14	11	5	3.50
MCAS Cherry Point	0	9	10	7.63
MCB Hawaii	8	13	2	3.70
MCB Camp Lejeune	3	19	8	5.83
MCB Camp Pendleton	4	18	8	5.67
MCB Quantico	0	17	1	5.28
MCAGCC Twentynine Palms	1	8	26	8.57
MCAS Yuma/Bob Stump	0	15	12	7.22
HQ USMC	**30**	**124**	**80**	**6.07**

Table 2-5 Marine Corps Encroachment Assessment Data Summary

Range	Severe	Moderate	Minimal	Encroachment Scores
MCAS Beaufort/Townsend	0	0	22	10.00
MCMWTC Bridgeport	2	18	2	5.00
MCIPAC-MCB Butler	7	5	0	2.08
MCAS Cherry Point	0	7	17	8.54
MCB Hawaii	5	7	9	5.95
MCB Camp Lejeune	0	18	15	7.27
MCB Camp Pendleton	8	10	15	6.06
MCB Quantico	0	6	16	8.64
MCAGCC Twentynine Palms	0	7	32	9.10
MCAS Yuma/Bob Stump	5	13	12	6.17
HQ USMC	**27**	**91**	**140**	**7.19**

Figure 2-10 Marine Corps Capability Chart and Scores

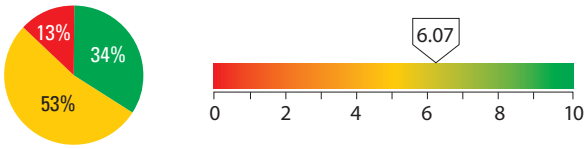
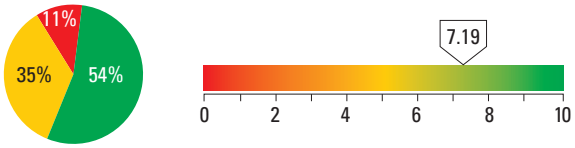


Figure 2-11 Marine Corps Encroachment Chart and Scores



2015

Summary Observations

- USMC's overall capability score has increased from 5.74 in 2012 to 6.07 in 2015.
- Fully Mission Capable (FMC) assessments (green) increased from 29% to 34%
- Partially Mission Capable (PMC) assessments (yellow) decreased from 57% to 53%
- Not Mission Capable (NMC) assessments (red) decreased from 14% to 13%

Historical Information, Results, and Future Projections

Calendar Year	2008	2009	2010	2011	2012
Capability Scores	5.73	5.73	6.34	5.75	5.74

The top three capability attributes with the maximum number of red and yellow assessments are (Figure 2-14):

- Target (3+17)
- Scoring and Feedback Systems (4+16)
- Threats (7+11)

The top three mission areas with the maximum number of red and yellow assessments are (Figure 2-16):

- Unit Level Training (10+50)
- Individual Level Training (3+46)
- MEU Level Training (16+22)

The Marine Corps has identified Service-level deficits in its ability to train. Continued analysis and the fielding of new systems may cause other requirements to surface. Today the projected operational range requirements at the Service level focus on the following four critical deficiencies: 1) USMC ranges presently lack capability in the size of facilities to fully exercise a large Marine Air Ground Task Force (MAGTF), 2) the proximity of capability to forces stationed in the western Pacific and Hawaii, 3) an air range on the east coast similar to the capabilities provided by the Marine Corps Air Station (MCAS) Yuma on the west coast, and 4) adequate littoral training opportunities with maneuver corridors and airspace to support ground and air maneuver inland from landing beaches. Refer to the USMC update in Chapter 1 for more details. Based on the scoring there are additional needs in the areas of Targets, Scoring and Feedback Systems, and Threats.Refer to the USMC's 10 individual range assessments for comments and additional information (Figure 2-18).

2015

Summary Observations

- USMC's overall encroachment score has increased from 7.09 in 2012 to 7.19 in 2015.
- Minimal risk assessments (green) remain unchanged at 54%
- Moderate risk assessment (yellow) increased from 34% to 35%
- Severe risk assessments (red) decreased from 12% to 11%

Historical Information, Results, and Future Projections

Calendar Year	2008	2009	2010	2011	2012
Encroachment Scores	7.90	7.90	7.44	7.13	7.09

The three encroachment factors with the maximum number of red and yellow assessment are (Figure 2-15):

- Adjacent Land Use (8+13)
- Munitions Restrictions (6+9)
- Airspace (2+17)

The top three mission areas with the maximum number of red and yellow assessments are (Figure 2-17):

- Unit Level Training (11-35)
- Individual Level Training (6-38)
- MEU Level Training (10+16)

Encroachment data must be carefully considered in order to fully understand the its meaning at each installation. The relative impact of each encroachment factor at each Marine Corps installation has different implications to the overall Mission Capable Ranges program. While two installations may have severe encroachment concerns from the same encroachment category, synergistic effects may be experienced at one installation but not at the other. The assessment process captures encroachment for current installation readiness activities. Refer to the USMC update in Chapter 1 for more details. Based on the assessment scoring encroachment risks to the USMC mission areas are most notable in the encroachment factors of adjacent land use, munitions restrictions, and airspace restrictions. Refer to the USMC's 10 individual range assessments for comments and additional information (Figure 2-18).

Figure 2-12 Marine Corps Capability Assessments by Range

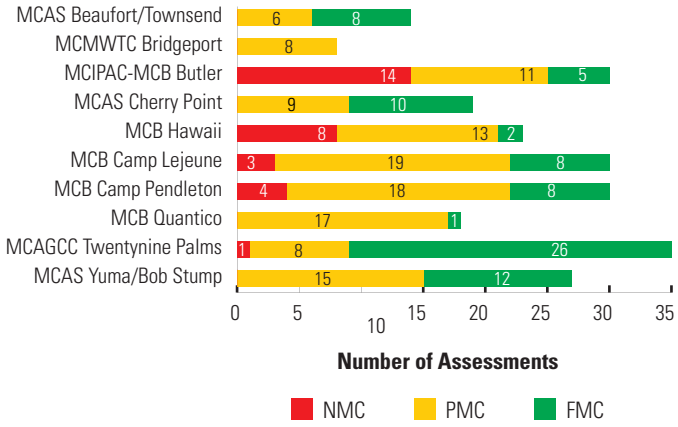


Figure 2-13 Marine Corps Encroachment Assessments by Range

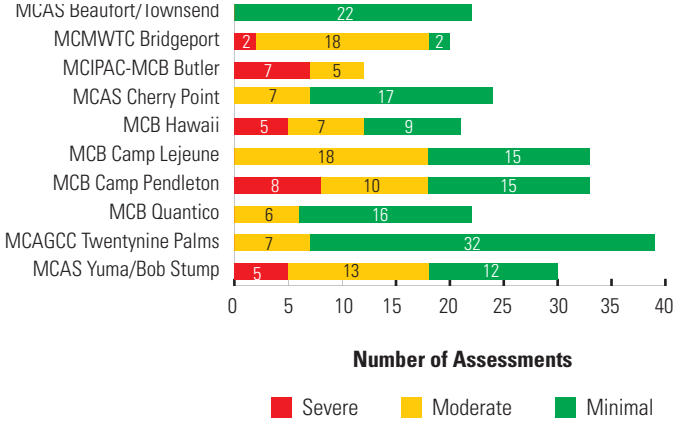


Figure 2-14 Marine Corps Capability Assessment by Attributes

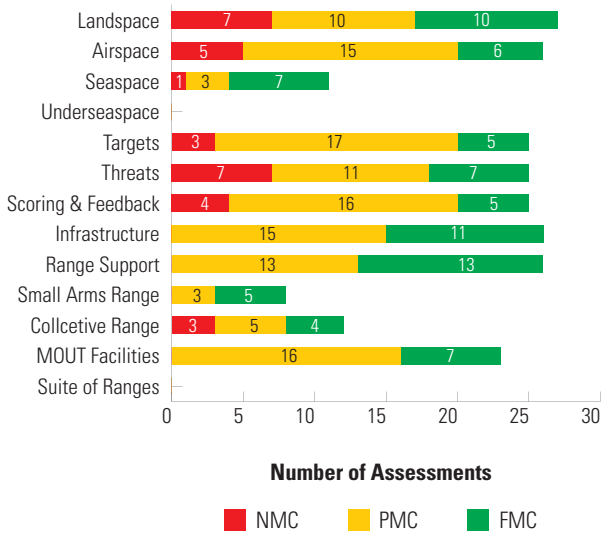


Figure 2-15 Marine Corps Encroachment Assessment by Factors

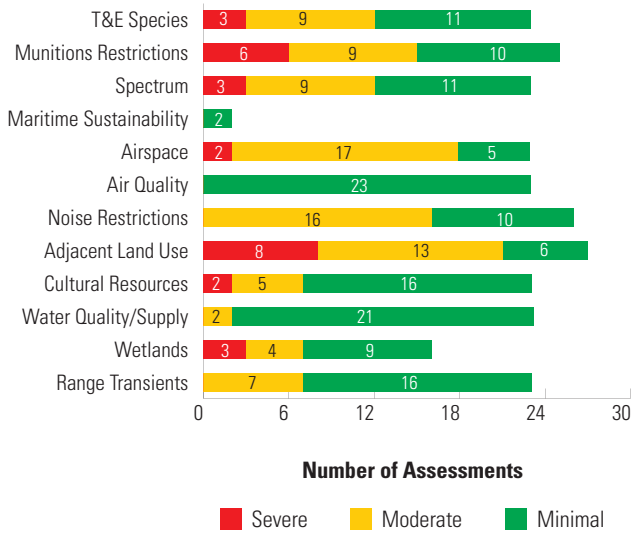


Figure 2-16 Marine Corps Capability Assessment by Mission Areas

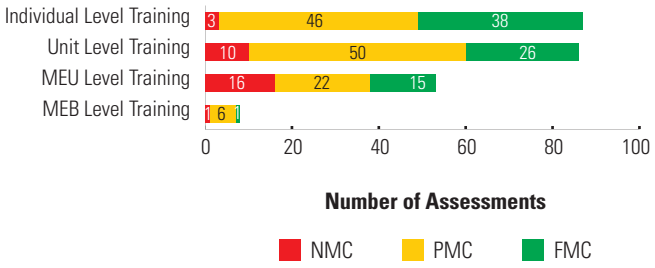
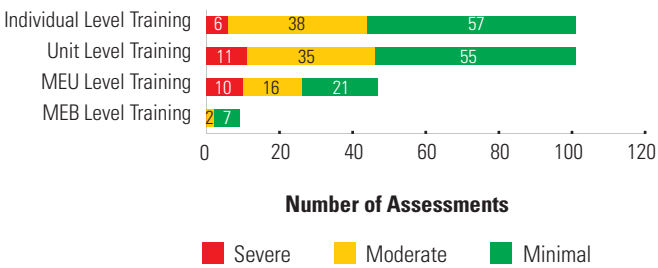


Figure 2-17 Marine Corps Encroachment Assessment by Mission Areas



Of the 14 ranges identified in the Marine Corps' range inventory in Appendix A, four are not assessed. Marine Corps Logistics Base (MCLB) Albany, MCLB Barstow, Marine Corps Air Station (MCAS) Miramar, and Marine Corps Recruit Depot (MCRD) Parris Island have no ranges other than small arms ranges used for the limited purpose of weapons qualification training. Due to their limited nature, the Marine Corps does not intend to formally evaluate these ranges unless the mission changes or some encroachment factor threatens their ability to function. MCIPAC-MCB Butler includes Camp Fuji and all Marine Corps ranges located in Okinawa, Japan.

Figure 2-18 Marine Corps Capability and Encroachment Assessment Detail

Marine Corps Air Station (MCAS) Beaufort/Townsend Assessment Details

Range Mission Description

The primary mission of Marine Corps Air Station Beaufort and Townsend Range is to provide support as an operational base and training area for MAG-31, which conducts and supports all active duty Marine Corps F/A-18 air operations on the East Coast. The mission of MAG-31 is to conduct anti-air-warfare and offensive air support operations in support of Fleet Marine Forces from advanced bases, expeditionary airfields, or aircraft carriers.

Capability Data

Mission Areas	Capability Attributes												
	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
Individual Level Training	PMC	FMC			PMC	FMC	FMC	PMC	FMC				
Unit Level Training	PMC	FMC			PMC	FMC	FMC	PMC	FMC				
MEU Level Training													
MEB Level Training													

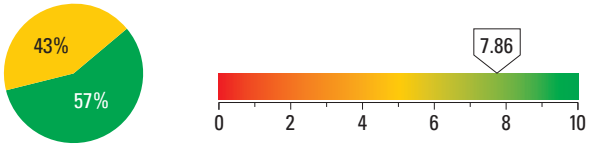
Legend: FMC, PMC, NMC

Encroachment Data

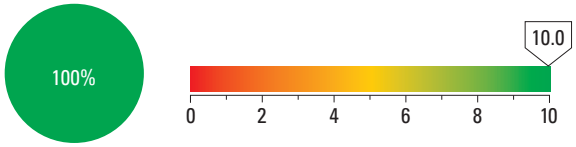
Mission Areas	Encroachment Factors											
	Threatened & Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Individual Level Training	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Unit Level Training	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
MEU Level Training												
MEB Level Training												

Legend: Minimal, Moderate, Severe

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

Doctrinal range requirements are derived from Operational Training Ranges Required Capabilities (MCRP 3-0C). Mission and Attribute areas in "White" were not assessed, or are not applicable to this installation. Townsend Range generally has the capability to support required training; however, the range lacks the land area necessary for development of Surface/Weapons Danger Zones required for certain stand-off weapons, in particular JDAM. The range lacks mobile targets. Land area and targets are the deficits with greatest impact on training mission, which is equal across all levels of training (mission area). The Marine Corps is pursuing acquisition of land adjacent to the Townsend Range to mitigate current shortfalls.

Summary Observations

Encroachment factors do not presently have adverse impacts on the training mission of Townsend Range. Mission and Attribute areas in "White" were not assessed, or are not applicable to this installation.

Marine Corps Air Station (MCAS) Beaufort/Townsend Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	8.33	8.33	8.57	7.86	7.86	**Encroachment Scores**	10.00	10.00	10.00	10.00	10.00
Impacts from key range capability shortcomings resulted in "Partially Mission Capable" designations for this installation during FYs 2012–2015 when assessing the installation's ability to support Marine Corps Task 1.7 (Provide Range and Training Areas that Support Operating Forces' Fire and Maneuver Training Mission Essential Tasks). Top two capabilities and/or enhancements required to facilitate transition to "Fully Mission Capable" include (1) upgraded aviation ordnance delivery training opportunities, and (2) enhanced joint forces training integration. During FY14, the Secretary of the Navy approved the Environmental Analysis for the modernization of Townsend Bombing Range. Land acquisition is underway, airspace modifications have been requested, anticipate full mission capability of the new range during 2018.						Impacts from key encroachment factors threatened to lead to "Partially Mission Capable" designations for this installation during FYs 2012–2015 when assessing the installation's ability to support Marine Corps Task 1.7 (Provide Range and Training Areas that Support Operating Forces' Fire and Maneuver Training Mission Essential Tasks). Successful mitigation of key encroachment factors, including (1) airspace restrictions, (2) frequency spectrum limitations, and (3) urban growth, facilitated retention of a "Fully Mission Capable" designation.					

MCAS Beaufort/Townsend Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Individual Level Training	●	Landspace does not support training using modern inventory of standoff weapons, such as JDAM, in that Surface/Weapons Danger Zones for these weapons exceed boundaries of the range. Marine Corps has undertaken preliminary analysis of feasibility of range expansion in order to accommodate standoff weapons air-to-ground deliveries.
	Unit Level Training	●	Same as above.
Targets	Individual Level Training	●	The range lacks mobile targets, affecting training realism. Marine Corps Range Modernization/Transformation program is addressing shortfalls consistent with available resources.
	Unit Level Training	●	Same as above.
Infrastructure	Individual Level Training	●	There are deficiencies in range maintenance and real property due to fiscal constraints.
	Unit Level Training	●	Same as above.

Figure 2-18 Marine Corps Capability and Encroachment Assessment Detail (continued)

Marine Corps Mountain Warfare Training Center (MCMWTC) Bridgeport Assessment Details

Range Mission Description

The Marine Corps Mountain Warfare Training Center (MCMWTC) Bridgeport provides range capabilities to support training of Marines, Marine units, and MAGTF elements in the mission essential tasks of modern expeditionary warfare, focused on the training requirements for operations in mountainous, high altitude, and cold weather environments, and to support the development and testing of specialized equipment for use in mountain and cold weather operations.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Individual Level Training	●	●						●	●				
Unit Level Training	●	●						●	●				
MEU Level Training													
MEB Level Training													

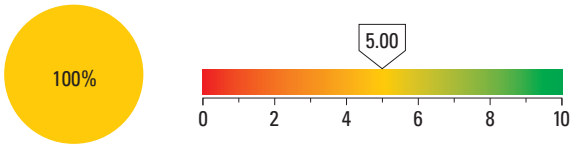
Legend: FMC ● PMC ● NMC ●

Encroachment Data

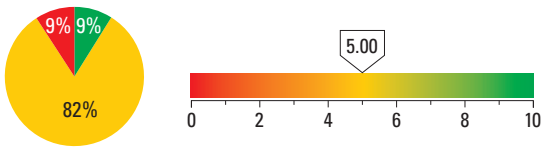
Mission Areas	Threatened & Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Individual Level Training	●	●	●		●	●	●	●	●	●	●	●
Unit Level Training	●	●	●		●	●	●	●	●	●	●	●
MEU Level Training												
MEB Level Training												

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

Doctrinal range requirements are derived from Operational Training Ranges Required Capabilities (MCRP 3-0C). MCMWTC Bridgeport RCMP analysis (FY2011) provides the basis for this assessment. Attribute areas in "White" were not assessed because the capability is not present at this installation. MCMWTC Bridgeport generally has the capability to support required non-live fire training; however, limitations on munitions use, target and training infrastructure emplacement, and other land use constraints affect capability to fully support training requirements. Marines and units training at MCMWTC make use of other Military Service ranges in the region for live-fire and maneuver training.

Summary Observations

Ninety percent of the range complex mission is moderately or severely impacted by encroachment factors. Munitions Restrictions, Adjacent Land Use, and Wetlands are the encroachment factors with greatest impact on training mission. The Range Complex Management Plan was completed in FY2011. The Encroachment Control plan has been completed. To mitigate encroachment impacts, units training at Bridgeport do not conduct live-fire training or make use of other Military Service ranges, particularly the live-fire training capabilities of the Army's Hawthorne Ammunition Depot (HWAD) in Nevada.

Historical Information, Results, and Future Projections

Calendar Year	2008	2009	2010	2011	2012
Capability Scores	N/A	N/A	5.00	5.00	5.00

Impacts from key range capabilities shortcomings resulted in "Partially Mission Capable" designations for this installation during FYs 2012–2015 when assessing the installation's ability to support Marine Corps Task 1.7 (Provide Range and Training Areas that Support Operating Forces' Fire and Maneuver Training Mission Essential Tasks). Top three capabilities and/or enhancements required to facilitate transition to "Fully Mission Capable" include (1) reduction of limitations associated with tenant status on US Forest Service (USFS) land, (2) fully resourced installation range program, and (3) consistent/permanent funding for range maintenance real property sustainment.

Historical Information, Results, and Future Projections

Calendar Year	2008	2009	2010	2011	2012
Encroachment Scores	8.00	8.00	4.50	5.00	5.00

Impacts from key encroachment factors resulted in "Partially Mission Capable" designations for this installation during FYs 2012–2015 when assessing the installation's ability to support Marine Corps Task 1.7 (Provide Range and Training Areas that Support Operating Forces' Fire and Maneuver Training Mission Essential Tasks). Successful mitigation of key encroachment factors, including (1) Munition Restrictions, (2) Adjacent Land Use, and (3) Wet lands, are required to facilitate transition to a "Fully Mission Capable" designation.

MCMWTC Bridgeport Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Individual Level Training	●	Training land is sufficiently extensive to support required training; however, limitations on land use affect capability of available land to fully support training. Ongoing planning and analysis is examining options to acquire in-holdings (private lands within the forest area) that would support development of permanent training structures such as MOUT facilities to mitigate limitations of USFS constraints.
	Unit Level Training	●	Same as above. Marines and Marine units training in mountain warfare operations make extensive use of other-Service ranges at Hawthorne Ammunition Depot (HWAD) and also use ranges at Fallon Training Range Complex (FTRC), to supplement training conducted at MCMWTC. HWAD and FTRC permit live-fire, but lacks ranges to support extended live-fire and maneuver training by Marine units.
Airspace	Individual Level Training	●	Use of MCMWTC by aviation assets presents challenges because no special use airspace is designated.
	Unit Level Training	●	Same as above.
Infrastructure	Individual Level Training	●	MCMWTC is responsible for road maintenance in the MCMWTC training areas. MCMWTC is generally not authorized to develop range infrastructure. Special use permits with the USFS restrict the installation of training equipment to a period of 30 days in MCMWTC training areas.
	Unit Level Training	●	Same as above.
Range Support	Individual Level Training	●	Communication infrastructure improvements to enhance range control and range safety have been planned, but implementation is subject to funding constraints.
	Unit Level Training	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Individual Level Training	●	Presence of sensitive species seasonally restricts use of some areas of MCMWTC. The presence of these resources significantly constrains the ability to identify landing zones (LZs) for rotary aircraft. Intensive survey and related environmental planning efforts are underway to address these and other natural resource-based issues and training impacts.
	Unit Level Training	●	Same as above.
Munitions Restrictions	Individual Level Training	●	MCMWTC is situated on land owned by the USFS. Military training proceeds pursuant to special use permits. Training lands of MCMWTC are also used by the public; the Marine Corps has no authority to restrict use of these lands. USFS permits strictly limit live-fire training within MCMWTC to limited use of small arms in designated areas. Fire danger is a significant concern, as is public safety. As a result, extensive live-fire training at MCMWTC is not feasible.
	Unit Level Training	●	Same as above.
Spectrum	Individual Level Training	●	Communications infrastructure does not support an adequate safety and operational VHF/HF net to cover all of the training areas. USFS permits strictly limit live-fire training within MCMWTC to limited use of small arms in designated areas.
	Unit Level Training	●	Same as above.
Airspace	Individual Level Training	●	MCMWTC has no assigned SUA. Military aviation operations are executed IAW federal aviation regulations in VFR conditions. The amount of general aviation traffic in vicinity of MCMWTC has increased during exercises over the past several years. USMC is working with FAA to accomplish pilot education, provide notice to general aviation when military activities are planned, and to explore options that enhance flight safety during MCMWTC exercises.
	Unit Level Training	●	Same as above.
Noise Restrictions	Individual Level Training	●	Potential impacts on forest land users (e.g., domestic livestock grazing, recreational outdoor use) from aircraft and ordnance noise contribute to concerns leading to restrictions on military uses of USFS lands that comprise MCMWTC.
	Unit Level Training	●	Same as above.
Adjacent Land Use	Individual Level Training	●	As noted, MCMWTC is situated on land owned by the USFS. The entire range complex is a co-use area, contains environmentally sensitive resources, and is subject to permit-based restrictions on land use for military training. Some adjacent lands are designated as wilderness pursuant to the Wilderness Act; these lands are generally not available for training and the designation may create public expectations about appropriate noise emanating from MCMWTC training activities into wilderness areas. In addition, Congress designated a portion of MCMWTC as a National Winter Recreational Area for snowmobile use by the public.
	Unit Level Training	●	Same as above.

Figure 2-18 Marine Corps Capability and Encroachment Assessment Detail (continued)

MCMWTC Bridgeport Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Cultural Resources	Individual Level Training	●	MCMWTC is characterized by cultural sites that must be surveyed and assessed by USFS, before USFS will permit training activities in areas with potentially significant sites. Cultural sites presently constrain ground movement and maneuver training and ability to identify suitable LZs for rotary aircraft. Analysis currently being conducted addresses these cultural sites in order to obtain clearance for training and establishment of suitable LZs.
	Unit Level Training	●	Same as above.
Water Quality/ Supply	Individual Level Training	●	Reported high nitrate levels in water supply are being investigated. Waste water treatment plant is near or at capacity during larger unit training events, limiting opportunity for expansion of training opportunities. One of the two wells that MCMWTC maintains is not usable for potable water due to reportedly elevated levels of manganese.
	Unit Level Training	●	Same as above.
Wetlands	Individual Level Training	●	MCMWTC is characterized by mountain meadows that contain wetland habitats and resources. The presence of these resources constrains training uses of these areas, including restricting avenues of movement through affected training areas. Wetlands also constrain ability to identify suitable landing zones (LZs) for rotary aircraft. Environmental analysis that is currently being conducted will address wetlands issues. Surveys and other analysis have been conducted and are ongoing to identify and obtain clearance for suitable LZ sites.
	Unit Level Training	●	Same as above.
Range Transients	Individual Level Training	●	The presence of non-military forest users significantly impacts training in that the rights of the public to use these forest lands is a factor in the limited use on most live-fire training.
	Unit Level Training	●	Same as above.

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Figure 2-18 Marine Corps Capability and Encroachment Assessment Detail (continued)

MCIPAC-MCB Butler Assessment Details

Range Mission Description

MCIPAC-MCB Butler provides range capabilities to support the training of Marines, Marine Corps units, MAGTF elements, and MAGTFs in the mission-essential tasks of modern expeditionary warfare. This also includes training the Third Marine Expeditionary Force (III MEF) and other units assigned to the installation. Additionally, MCIPAC supports training the other uniformed services based in Japan and the Japanese Self-Defense Force.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Individual Level Training	NMC	PMC	FMC		PMC	NMC	PMC	FMC	PMC	PMC		FMC	
Unit Level Training	NMC	NMC	PMC		NMC	NMC	PMC	FMC	PMC		NMC	PMC	
MEU Level Training	NMC	NMC	NMC		NMC	NMC	NMC	FMC	PMC		NMC	PMC	
MEB Level Training													

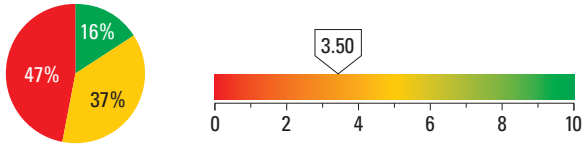
Legend: FMC (Fully Mission Capable), PMC (Partially Mission Capable), NMC (Not Mission Capable)

Encroachment Data

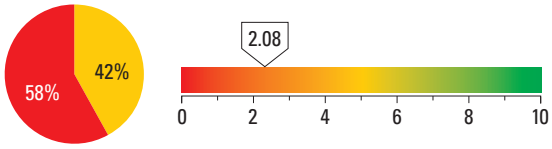
Mission Areas	Threatened & Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Individual Level Training		Moderate			Moderate		Moderate	Severe				
Unit Level Training		Severe			Severe		Moderate	Severe				
MEU Level Training		Severe			Severe		Moderate	Severe				
MEB Level Training												

Legend: Minimal, Moderate, Severe

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

MCIPAC ranges in Japan are on Camp Smedley D. Butler on Okinawa, Japan, and Combined Arms Training Center (CATC) Camp Fuji, Japan. The Marine Corps initiated development of a Range Complex Management Plan for MCIPAC-MCB Butler late in FY2009, which was completed in FY2012 and included detailed assessments of range capabilities. Deficits noted in available land and airspace are the most critical shortfalls. The lack of targets and threat capability are additional critical shortfalls. While CATC Camp Fuji Japan, on mainland Japan, provides additional range capabilities, the bulk of the Third Marine Expeditionary Force (III MEF) units based in WestPac are located in Okinawa. Consequently, the bulk of the training requirements for Okinawa-based units must be accomplished in Okinawa because of the time, cost, and range availability associated with training at CATC.

Summary Observations

Marine Corps Installations Pacific (MCIPAC) includes Okinawa, Japan, and Combined Arms Training Center (CATC) Camp Fuji, Japan. The Marine Corps initiated development of a Range Complex Management Plan for MCIPAC-MCB Butler late in FY2009, which was completed in FY2012 included detailed assessments of range capabilities. The RCMP includes both encroachment assessments and detailed assessment of range capabilities. Complete assessments are included for the FY2015 Sustainable Ranges Report, based on information from the RCMP. The greatest encroachment challenges facing MCIPAC ranges in Okinawa and Japan are Adjacent Land Use, Munitions Restrictions, Airspace and increased use of ranges and training areas by the Japanese Self Ground Defense Force.

MCIPAC-MCB Butler Assessment Details

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Capability Scores	N/A	N/A	N/A	3.79	3.50
When assessing the installation's ability to support Marine Corps Task 1.7 (Provide Range and Training Areas that Support Operating Forces' Fire and Maneuver Training Mission Essential Tasks), impacts from key range capabilities shortcomings resulted in "Partially Mission Capable" designations for this installation in 2015. The top three capabilities and/or enhancements required to facilitate transition to "Fully Mission Capable" include: (1) enhanced/scored ground combat element direct and indirect fire ranges, (2) MAGTF combined arms live-fire and maneuver training capability, and (3) scored aviation ranges (rotary and fixed-wing).					

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Encroachment Scores	N/A	N/A	N/A	2.08	2.08
Impacts from key encroachment factors resulted in "Partially Mission Capable" designations for this installation in 2011 when assessing the installation's ability to support Marine Corps Task 1.7 Provide Range and Training Areas that Support Operating Forces' Fire and Maneuver Training Mission Essential Tasks). Successful mitigation of key encroachment factors, including (1) airspace restrictions, (2) adjacent land use/urban growth, and (3) munitions restrictions are required to facilitate transition to a "Fully Mission Capable" designation.					

MCIPAC-MCB Butler Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Individual Level Training		Effective training is possible on Okinawa; however, it requires innovative ideas and a continuous outreach program to comply with the physical limitations of being located on a small island. The Central Training Area (CTA) comprises MCB Camp Butler's training facilities. Public roads trisect and surround CTA. Two impact areas occupy a significant portion of the south and north CTA. The largest section of maneuver area is approximately 7.5 km x 3 km, but it is a heavily vegetated terrain full of ravines and therefore restricts mobility. As such, this small area limits the types of training that can be conducted and the types of weapons that can be fired. Conversely, all weapons systems organic to the MEU can be fired within the CTA, with limitations. For example, guided munitions are excluded due to environmental limitations and political agreements on Okinawa. .50 caliber machine guns firing is restricted to two ranges on the island; at one, gunners have to place the gun in a restraining device, which prevents them from shifting fires. No aviation weapons can be fired on the island. There is a single Terrain Flight (TERF) route, much of which is over water. The size of the land area restricts ground and aviation training, which diminishes realism. The Defense Policy Review Initiative (DPRI) is a U.S. Government/Government of Japan agreement signed at the Secretary of State/Secretary of Defense level that reduces the impact and scope of U.S. Marine training on Okinawa. Any expansion of training space or capability will need robust support from the State and DoD level through the U.S./GoJ Joint Committee.
	Unit Level Training		Same as above, with exacerbated limitations.
	MEU Level Training		Same as above.
Airspace	Individual Level Training		The dimensions of the special use airspace (SUA) are limited over CTA, especially vertically. Ceilings vary from 1,000' MSL to 3,000' MSL. Some of the instrument approaches into Kadena Air Base overlay this SUA. Additionally, the relatively low ceilings for this SUA are minimally adequate to support individual weapons firing. Rotary wing aircrew are prohibited from firing weapons on the island. Rotary wing aircrew must fire their weapons off-island. Expanding this SUA vertically is being explored with US Air Force and the Japanese Civil Aeronautics Bureau.
	Unit Level Training		With SUA over CTA capped at either 1,000' or 3,000' MSL, mortars must fire at a minimum charge to preclude exiting the airspace. Fixed-wing aircraft are prohibited from flying in the SUA, thus cannot support training operations within the CTA. The limitations imposed on mortar fires constrain combined-arms fires to platoon level. Fixed-wing aircraft cannot operate within the CTA to support ground training, but CAS is available at nearby US Air Force ranges just off Okinawa. Expanding this SUA vertically is being explored with US Air Force and the Japanese Civil Aeronautics Bureau.
	MEU Level Training		Same as above.
Seaspace	Unit Level Training		Per agreement with the Government of Japan, there are several water surface areas available for training 120 days per year. Two small training beach areas, Kin Green and Kin Blue, provide access to the sea and land, but traveling from them requires the use of public roads. Available beaches are not contiguous with the available training space within the CTA or at CATC Fuji and no beach training areas exist on Ie Shima island currently. The limited beach areas for landings precludes conducting large-scale amphibious assaults or raids. Transitioning from the beach to the training areas over public roads reduces the realism of and segments training. The DPRI is a U.S. Government/ Government of Japan agreement signed at the Secretary of State/Secretary of Defense level which agrees to reduce the impact and scope of US Marine training on Okinawa. Any expansion of training space or capability will need robust support from State/SecDef level through the US/Government of Japan Joint Committee.
	MEU Level Training		Same as above.

Figure 2-18 Marine Corps Capability and Encroachment Assessment Detail (continued)

MCIPAC-MCB Butler Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Targets	Individual Level Training	🟡	Twenty-five vehicle type steel targets have been added across five ranges within the CTA as part of the operational range clearance program. The lack of adequate targets makes it difficult to improve weapons skills.
	Unit Level Training	🔴	Same as above.
	MEU Level Training	🔴	Same as above.
Threats	Individual Level Training	🔴	There are no Electronic Warfare (EW) threats for aviation on Okinawa or mainland Japan. There is no standing OpFor to support ground training. Aviators, who are permanently assigned to Okinawa-based squadrons, are unable to familiarize themselves with EW threat systems or practice tactics against them. For training exercises, ground OpFor normally comes from a sister unit, which is not trained to execute threat tactics, and thus, provides a less effective training experience.
	Unit Level Training	🔴	Same as above. Shortfalls in threat capabilities have most significant impact on more complex training events.
	MEU Level Training	🔴	Same as above.
Scoring & Feedback System	Individual Level Training	🟡	There is a limited number of ranges that have targets that are automated or scored. Targets that do not provide scoring are less effective for improving weapons skills. The Range Modernization/Transformation program provides upgrades within its available resources.
	Unit Level Training	🟡	Unit and MEU-level training requires enhanced instrumentation for training event reconstruction, debriefing, and replay. Without feedback, units do not know how effective their tactics and techniques are, nor do they have the opportunity to correct mistakes. The Marine Corps Range Modernization/Transformation program continues to analyze and address these shortfalls through range investments consistent with available resources.
	MEU Level Training	🔴	Same as above.
Range Support	Individual Level Training	🟡	The Range Modernization/Transformation program upgraded the communications capabilities and installed IRSS to provide an air picture in 2011. This upgrade fixed communications with ground units; however, there is still limited communications capability with air units.
	Unit Level Training	🟡	Same as above.
	MEU Level Training	🟡	Same as above.
Small Arms Ranges	Individual Level Training	🟡	The targetry on existing ranges is very limited, which degrades their usefulness. Without adequate targets to fire at, individual weapons skills are degraded. There is an initiative to place additional targets in the impact area.
Collective Ranges	Unit Level Training	🔴	There are two ranges in Okinawa that support live-fire and maneuver (LFAM) training to the platoon level, and none for live-fire convoy operations. International agreements, such as DPRI, impact any significant attempt at expansion to develop LFAM or convoy ranges. Integrating supporting arms is limited to restricted mortar fires. This lack of LFAM and convoy ranges limits opportunities for ground units to train in an LFAM or combined-arms environment. Range Operations is working to expand the capabilities of the existing LFAM ranges.
	MEU Level Training	🔴	Same as above.
MOUT Facilities	Unit Level Training	🟡	There are three, small non-live-fire, MOUT facilities in Okinawa. The largest is an 11-building facility made up of shipping containers. The largest could support training up to a company level, but there is not enough capacity to support all of the units that need it. MOUT facilities have tripled in recent years, as a result of the Range Modernization/Transformation program. The few small MOUT facilities available on Okinawa limit the number increases the competition to use them, and their small sizes do not provide an effective venue for realistic MOUT training at the company and battalion level. The Marine Corps Range Modernization/Transformation program continues to address shortfalls consistent with available assets.
	MEU Level Training	🟡	Same as above.

MCIPAC-MCB Butler Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Munitions Restrictions	Individual Level Training	🟡	Munitions restrictions in the Central Training Area on Okinawa are driven primarily by three factors working in consonance: geographic constraints, political constraints, and virtually unimpeded encroachment by local communities. Per agreement with the Government of Japan, artillery live-fire training is no longer conducted on Okinawa. Instead, it takes place at five Japanese Ground Self Defense Force ranges. Okinawa has two ranges where .50cal machine guns may be fired. At one range, the gun's barrel must be placed into a physical restraint to prevent its movement; while guns must be bore sighted and have restraining devices added to ensure no rounds impact outside of a concrete tunnel approximately 20m wide and 15m high on the other. Land and airspace are also not large enough to allow for close air support training on Okinawa. Simplistic CAS is conducted on very small Air Force ranges just off of Okinawa by both Marine rotary wing and fixed-wing units. These restrictions limit the conduct of basic and combined-arms live-fire training operations to the platoon level. The DPRI, an agreement between the U.S. and Japanese governments, reduces the impact and scope of U.S. Marine training on Okinawa. Expanding training space or capability on Okinawa requires robust support from the Departments of State and Defense through the USG/GoJ.
	Unit Level Training	🔴	Same as above, but even more aggravated in proportion to the size of the unit.
	MEU Level Training	🔴	Same as above, but even more aggravated in proportion to the size of the unit.
Airspace	Individual Level Training	🟡	MCB Camp Butler CTA SUA's dimensions are very limited, particularly vertically. Its ceiling varies from 1,000' MSL to 3,000' MSL and some of the instrument approaches into Kadena Air Base overfly this SUA. The relatively low ceilings for this SUA are minimally adequate to support individual weapons firing. Expanding this SUA vertically is being explored with by MCIPAC and Japanese Civil Aeronautics Bureau.
	Unit Level Training	🔴	Same as above. In addition, the relatively low ceilings for this SUA limit live-fire operations like mortar employment and restrict fixed-wing aircraft from providing training support for ground units, such as simulated close air support. Expanding this SUA vertically is being explored with by MCIPAC and Japanese Civil Aeronautics Bureau; however, simulated Fixed-Wing/Rotary-Wing (RW/FW) Simulated Close Air Support (SIMCAS) remain unlikely because of the size and geographic constraints of the training area and existing political constraints and noise concerns. Accordingly, FW/RW SIMCAS and Fire Support Team/ FAC training occur at a very small island location off the west coast of the main island of Okinawa, well clear of the CTA. Work-around for mortar firing currently exist by putting someone from the firing unit in the Naha Approach Control to provide positive communications between the firing party and the control tower, calling a cease-fire when aircraft are in the airspace.
	MEU Level Training	🔴	Same as above.
Noise Restrictions	Individual Level Training	🟡	Small villages and municipalities surround the ranges and training areas, particularly the Hansen impact area, located on the southwest end of CTA. Japan has no zoning laws. Thus, there is no buffer between these towns and CTA. Noise from training, especially live-fire operations, migrates off-base. As a result of having to operate in such a compact, urbanized area, training operations may be limited. Although the U.S. Marine Corps respects its surrounding communities, it must continue to train locally and conduct live-fire operations. Therefore, through its aggressive outreach program, MCB Camp Smedley D. Butler works to minimize this impact. During certain times of the year, training operations may be limited or suspended as a courtesy during school testing.
	Unit Level Training	🟡	Same as above.
	MEU Level Training	🟡	Same as above.
Adjacent Land Use	Individual Level Training	🔴	Public roads trisect the CTA and small towns surround it. This is particularly evident near the Hansen impact area, located on the southwest end of CTA. In addition, tacit farms occupy a few areas within the border of CTA. Since there is no buffer between these towns and CTA, noise from training such as that from live-fire operations migrates off-base. During certain times of the year, training operations may be limited or suspended to prevent open area/ wild fires that can have any number of military or civilian ignition sources. Closing the range for open area/wildfires disrupts live-fire training and could cause a degradation in unit readiness. Developing additional ranges in such a compact, urbanized area is also very challenging. As a result of these constraints, training operations have been limited in the past, and expanding ranges is very difficult. These limitations require flexibility and creative training to realize effective training support. Furthermore, the DPRI reduces the impact and scope of U.S. Marine training on Okinawa. Expanding training space or capability requires support from the Departments of State and Defense through the USG/GoJ.
	Unit Level Training	🔴	Same as above.
	MEU Level Training	🔴	Same as above.

Figure 2-18 Marine Corps Capability and Encroachment Assessment Detail (continued)

MCAS Cherry Point Assessment Details

Range Mission Description

MCAS Cherry Point provides range capabilities to support training of Marines, Marine Corps units, MAGTF elements, and MAGTFs in the mission essential tasks of modern expeditionary warfare, including the training requirements of the 2d Marine Air Wing (2d MAW) and other units assigned to the installation.

Capability Data

Mission Areas	Capability Attributes												
	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
Individual Level Training	●	●	●		●	●	●	●	●	●		●	
Unit Level Training	●	●	●		●	●	●	●	●			●	
MEU Level Training													
MEB Level Training													

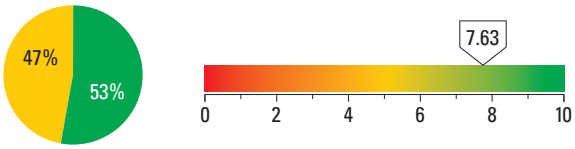
Legend: FMC ● PMC ● NMC ●

Encroachment Data

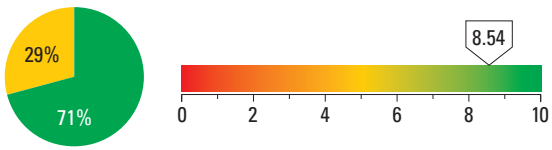
Mission Areas	Encroachment Factors											
	Threatened & Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Individual Level Training	●	●	●	●	●	●	●	●	●	●	●	●
Unit Level Training	●	●	●	●	●	●	●	●	●	●	●	●
MEU Level Training												
MEB Level Training												

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

Operational Training Ranges Required Capabilities (MCRP 3-0C) and the Range Complex Management Plan (RCMP) are the references for this assessment. An update to the RCMP will be completed late in 2014, which will fall outside the scope of this assessment. Attribute areas in "White" were not assessed at MCAS Cherry Point. MEB-level and MEU-level training were not assessed. The USMC added assessments for developing capability supporting small boat, crew served weapons live-fire events at BT-11. Targets and Scoring & Feedback deficits are the capability attribute most significantly impacting the overall mission. Capability shortfalls affect all levels of training equally.

Summary Observations

Twenty-nine percent of the range/range complex mission is moderately impacted by encroachment factors. Munitions Restrictions, Noise Restrictions, Adjacent Land Use and Range Transients are the encroachment factors moderately impacting most of the training mission. Individual and Unit Level Training are the affected mission areas. Individual level training is slightly more impacted than unit level training. An Encroachment Control Plan (ECP) has been completed and execution is ongoing. Numerous wind developers have proposed wind energy farms next to or within the MCAS Cherry Point 5306A Special Use Airspace (SUA). The pressures from wind developers make it a necessity to look for means to protect this SUA.

Historical Information, Results, and Future Projections

Calendar Year	2008	2009	2010	2011	2012
Capability Scores	7.0	7.0	8.67	7.65	7.65

Impacts from key range capabilities shortcomings resulted in "Partially Mission Capable" designations for this installation during FYs 2012–2015 when assessing the installation's ability to support Marine Corps Task 1.7 (Provide Range and Training Areas that Support Operating Forces' Fire and Maneuver Training Mission Essential Tasks). The top three capabilities and/or enhancements required to facilitate transition to "Fully Mission Capable" include (1) upgraded and enhanced range safety and exercise command and control communications systems, (2) fully resourced range control facility, (3) urban training facilities including urban close air support (CAS) capability and MOUT training facility.

Historical Information, Results, and Future Projections

Calendar Year	2008	2009	2010	2011	2012
Encroachment Scores	7.73	7.73	8.41	8.41	8.41

Impacts from key encroachment factors resulted in "Partially Mission Capable" designations for this installation during FYs 2012–2015 when assessing the installation's ability to support Marine Corps Task 1.7 (Provide Range and Training Areas that Support Operating Forces' Fire and Maneuver Training Mission Essential Tasks). Key encroachment factors to address include (1) Munitions Restrictions, (2) Noise Restrictions, and (3) Adjacent Land Use, and (4) Range Transients, in order to facilitate transition to a "Fully Mission Capable" designation.

MCAS Cherry Point Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Seaspace	Individual Level Training	●	There is a new and developing capability supporting small boat, crew served weapons live-fire events at BT-11. Waters surrounding BT-9 and BT-11 are public waters and any seaspace utilized for training by units stationed at MCAS Cherry Point is the Navy's CPOA (scheduled via FACSFAC VACAPES).
	Unit Level Training	●	Same as above.
Targets	Individual Level Training	●	Targets do not meet requirements of MCRP 3-0C; ranges lack structural/urban targets. Range Modernization/ Transformation program is addressing shortfalls consistent with available resources and Marine Corps priorities.
	Unit Level Training	●	Same as above.
Scoring & Feedback System	Individual Level Training	●	Scoring and Feedback systems do not meet requirements of MCRP 3-0C, which include automated scoring, rea-time feedback, and voice/auto real-time kill notification (RTKN). Debrief/after action report requirements are available at the host range facility or remotely at another location, or both. MCAS Cherry Point scoring is automated via WISS or hit/miss calls via range operations.
	Unit Level Training	●	Same as above.
Infrastructure	Individual Level Training	●	Range control facility resourcing has been addressed with addition of dedicated personnel. A new microwave transmission tower at BT-11 is to be installed to enhance range control and communications. Project is in development and will not be completed before the 2015 SRR is published. Upon completion, range control infrastructure will be "Fully Mission Capable".
	Unit Level Training	●	Same as above.
MOUT Facilities	Unit Level Training	●	Limited Unit Level MOUT Capability. The MCRP 3-0 requirement for MOUT (ACE) is a 7 square mile facility with a 3 square mile live-fire training area, and includes SDZ for ground and aviation direct and indirect fire weapon systems. The airfield seizure facility at Atlantic Field is non-live fire and is not authorized for inert aviation weapons. (This training can only be completed at MCAS Yuma and MCAGCC Twentynine Palms).

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Munitions Restrictions	Individual Level Training	●	Aerial bombing and gunnery ranges BT-9 and BT-11, situated on islands within R5306A, are surrounded by NC Public Trust Waters with the intra-coastal waterway splitting the two range areas. The area supports fisheries and recreation. Associated limitations on Surface/Weapons Danger Zone (SDZ/WDZ) restrict allowable munitions for aerial bombing and gunnery using BT-9 and BT-11. Inert ordnance only authorized up to 500 lbs at BT-11; 35 lbs TNT equivalent for BT-9; no cluster munitions. BT-9 and BT-11 range areas are also used by water-borne craft in practicing shallow water target engagements; however, the firing of primary weapons systems using .50 caliber munitions from surface platforms is restricted at BT-11. Actions to address include community liaison; however remedies remain elusive.
	Unit Level Training	●	Same as above.
Noise Restrictions	Individual Level Training	●	The installation operates a Class C Range for Explosive Ordnance Disposal. The range is capable of disposing of up to 150 lbs net explosive weight (NEW). However, the base has self-imposed limitations of 50 lbs NEW to ensure noise from detonations does not impact the nearby communities.
Adjacent Land Use	Individual Level Training	●	Population growth in the region is resulting in increased housing and urban infrastructure construction in the vicinity of the installation and associated airspace and ranges. The changing land use increasingly impacts the base's training flexibility. ALF Bogue also has major urban encroachment. BT-9 and BT-11 are affected by civilian use of surrounding waters (see above). Examples of impacts include noise restrictions affecting munitions use and night training, increased light that conflicts with flight crew's use of night vision equipment, and alteration of flight patterns to avoid urbanizing areas, both within restricted SUA and for low-altitude routes outside restricted airspace. Explosive storage areas are negatively impacted by flight corridor civilian overflight and vehicle traffic on adjacent roads. Cellular towers constructed proximal to Cherry Point boundaries can negatively affect operations by raising the weather minimums required for aircraft conducting instrument approaches. Actions to address impacts include community liaison; however remedies remain elusive.
	Unit Level Training	●	Same as above.
Range Transients	Individual Level Training	●	As noted above, the waters surrounding BT-9 and BT-11 are used extensively for civilian activities. MCOLF Atlantic is a high value 1200 acre airfield facility used for numerous supporting arms (aviation) activities. This airfield is subject to incursions by recreational off-road vehicle users. Actions to address impacts include patrolling, reporting, and community liaison.
	Unit Level Training	●	Same as above.

Figure 2-18 Marine Corps Capability and Encroachment Assessment Detail (continued)

Marine Corps Base Hawaii Assessment Details

Range Mission Description

MCB Hawaii provides range capabilities to support training of Marines, Marine Corps units, MAGTF elements, and MAGTFs in the mission essential tasks of modern expeditionary warfare, focused on training requirements of units assigned to the installation.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Individual Level Training	●	●			●	●	●	●	●	●		●	
Unit Level Training	●	●			●	●	●	●	●		●	●	
MEU Level Training	●				●	●	●					●	
MEB Level Training													

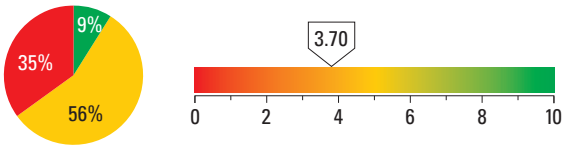
Legend: FMC ● PMC ● NMC ●

Encroachment Data

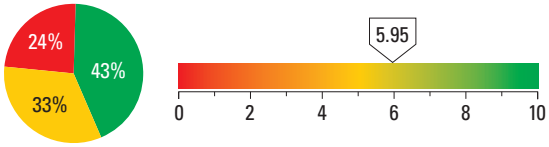
Mission Areas	Threatened & Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Individual Level Training	●	●	●			●	●	●	●	●	●	●
Unit Level Training	●	●	●			●	●	●	●	●	●	●
MEU Level Training								●				
MEB Level Training												

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

Doctrinal range requirements are derived from Operational Training Ranges Required Capabilities (MCRP 3-0C). MCB Hawaii RCMP provides data for this assessment. Mission and Attribute areas in "white" were not assessed or are not applicable to this installation. Critical deficits have been noted in available training land and airspace, impacting the ability to conduct required training or develop sufficient ranges. Hawaii-based Marine units rely extensively, and for some training exclusively, on other Military Service ranges. Other significant deficits are the lack of modern automated targets. The ability of Marine Corps Range/Modernization/Transformation program to address the land and airspace deficits is marginal. The capability shortfalls noted generally affect all levels of training. A recently completed training feasibility study identifies alternative sites that MCBH can pursue to obtain additional training areas and limited live-fire ranges. The urbanized nature of Oahu increasingly affects MCB Hawaii's capability to support fully the training requirements of Hawaii-based, operational force units. These units accomplish required training by extensively utilizing other Military Service ranges in Hawaii.

Summary Observations

Over 50% of the range complex mission is moderately or severely impacted by encroachment factors. Mission and Attribute areas in "White" were not assessed, or are not applicable to this installation. Adjacent Land Use, Munitions Restrictions, and Noise Restrictions are the encroachment factors with greatest impact on training mission. MCB Hawaii (MCBH) has implemented a comprehensive Encroachment Control Program, with an active community relations effort as the core element of its strategy. In support of this effort, an overarching, headquarters-level Encroachment Control Plan (ECP) was completed in FY2013. The urbanized nature of Oahu with its associated impacts on range use increasingly affects MCBH's capability to support the home-stationed, operational force units' training requirements fully. Units accomplish required training by extensively utilizing other Military Service ranges in Hawaii. The introduction of new light and medium aircraft to MCBH has also created new challenges for meeting training requirements with MCBH limited range capabilities.

Marine Corps Base Hawaii Assessment Details

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Capability Scores	4.47	4.47	4.55	4.09	4.09
Impacts from key range capabilities shortcomings resulted in "Partially Mission Capable" designations for this installation during FYs 2012–2015 when assessing the installation's ability to support Marine Corps Task 1.7 (Provide Range and Training Areas that Support Operating Forces' Fire and Maneuver Training Mission Essential Tasks). Top three capabilities and/or enhancements required to facilitate transition to "Fully Mission Capable" include (1) sufficient land and airspace to support a MEU/BLT non live-fire maneuver in the Hawaiian Islands, (2) fully resourced range control facility, and (3) scored aviation and ground ranges.					

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Encroachment Scores	7.27	7.27	6.19	6.19	6.19
Impacts from key encroachment factors resulted in "Partially Mission Capable" designations for this installation during FYs 2012–2015 when assessing the installation's ability to support Marine Corps Task 1.7 (Provide Range and Training Areas that Support Operating Forces' Fire and Maneuver Training Mission Essential Tasks). Successful mitigation of key encroachment factors, including (1) Adjacent Land Use, (2) Munition Restrictions, and (3) Noise Restrictions, are required to facilitate transition to a "Fully Mission Capable" designation.					

Marine Corps Base Hawaii Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Individual Level Training	🟡	MCB Hawaii (MCBH) ranges support limited live-fire training at the individual level. Live-fire training of artillerymen and heavy mortar-men is prohibited on MCBH ranges. Convoy operations training is not feasible due to space constraints. Combat logistics training using heavy equipment is severely constrained by space limitations. Required training relies on use of other-Service ranges and airspace in Hawaii, which requires travel with associated costs and is further constrained by competition to use the ranges. The logistics, costs, and time to conduct required training increase when it is conducted off-island at an other- Military Service range. Additionally, an overall shortage of ranges and training areas for all Services on Oahu creates significant scheduling and coordination challenges. A majority of field training for all Marines must be conducted off of MCBH at satellite ranges and training areas or on other-Military Service ranges. A recent training area analysis study based upon the required range capability document indicates MCB Hawaii should have 165,000 acres of maneuver training area land and airspace. MCB Hawaii has less than 2,000 acres dedicated to training and all of that space is encroached upon and has severe use restrictions.
	Unit Level Training	🔴	Same as above.
	MEU Level Training	🔴	Due to a lack of sufficient training lands, battalion-level training is not feasible. Home-stationed units of 3d Marine Infantry Regiment rely on the use of other-Service ranges and airspace in Hawaii to accomplish their training. The logistics, costs, and time to conduct required training increase when it is conducted off-island at an other Military Service range.
Airspace	Individual Level Training	🔴	The composition of Marine Aircraft Group 24 (MAG24) has changed significantly during the past two years and will continue to change until 2017. The addition of an HMLA with AH-1Ws and UH-1Ys has increased aerial gunnery requirements and the total number of aircraft that need to fly TERF. VMM squadrons and MV-22Bs will generate a new requirement for a low altitude tactics (LAT) route. MCB Hawaii has no restricted airspace and does not possess an air gunnery range. There is no USMC owned tactical flight training area available to MAG24, there is no LAT flight area for the Tilt Rotor squadrons or UAS training area. MAG 24 is completely reliant upon other services training areas to meet basic METs. Access to Army aviation ranges on Oahu has been limited by adjacent land use concerns.
	Unit Level Training	🔴	Same as above.
Targets	Individual Level Training	🟡	MCBH ranges lack automated, fixed and mobile targets. This shortfall reduces training realism, effectiveness, and training assessment capability. A lack of available training space severely constrains options for range development, threat system employment, and target emplacement; consequently, this shortfall is not likely to be remedied on MCBH ranges.
	Unit Level Training	🟡	Same as above.
	MEU Level Training	🔴	Same as above. Training constraints due to lack of available training space are most severe for larger units and MAGTFs.
Threats	Individual Level Training	🟡	MCBH ranges lack realistic, modern threat representation / simulation capability. This shortfall reduces training realism, effectiveness, and training assessment capability. A lack of available training space severely constrains options for range development, threat system employment, and target emplacement; this shortfall is not likely to be remedied on MCBH ranges.
	Unit Level Training	🟡	Same as above.
	MEU Level Training	🔴	Same as above. Training constraints due to lack of available training space are most severe for larger units and MAGTFs.

Figure 2-18 Marine Corps Capability and Encroachment Assessment Detail (continued)

Marine Corps Base Hawaii Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Scoring & Feedback System	Individual Level Training	🟡	MCBH range complex lacks real-time training feedback systems. This shortfall reduces training realism, effectiveness, and training assessment capability. The Range Modernization/ Transformation program is addressing shortfalls consistent with available resources and Service priorities. Increased use of Instrumented-Tactical Engagement Simulation Systems (I-TESS) and renewal of the Location of Misses and Hits (LOMAH) maintenance contract for rifle marksmanship range will help to mitigate some instrumentation shortfalls.
	Unit Level Training	🟡	Same as the preceding comment. Replacing old target mechanisms at Kaneohe Bay Range facility with updated technology will provide a more enhanced feedback capability.
	MEU Level Training	🔴	Same as above.
Range Support	Individual Level Training	🟡	MCB Hawaii lacks sufficient range control personnel to provide the full safety and operational support required by training units. Request for review is under review.
	Unit Level Training	🟡	Same as above
Small Arms Ranges	Individual Level Training	🟡	As noted above, insufficient land area for range development limits required small arms training to static ranges. The comments above regarding deficits in Targets, Threat Systems, and Scoring & Feedback capabilities are also pertinent. This shortfall reduces the effectiveness of live-fire training. Units rely on other-Services, more advanced range capabilities to meet training requirements.
Collective Ranges	Unit Level Training	🔴	As noted above, insufficient land area for range development and lack of special use airspace preclude conducting collective training except at most basic levels on MCB Hawaii ranges. This shortfall limits the utility of MCBH ranges to support collective training. Units are forced to use available other-Service ranges to accomplish required training.
MOUT Ranges	Individual Level Training	🟡	The Immersive Infantry Trainer (IIT) MOUT facility at the Marine Corps Training Area Bellows has improved MCBH's MOUT capability, but a medium to large MOUT is still not available. MCBH lacks a significant live-fire MOUT capability. Modular MOUT facilities have been constructed at the US Army Pohakuloa Training Area, but are not readily accessible for training.
	Unit Level Training	🟡	Same as above.
	MEU Level Training	🟡	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Unit Level Training	🟡	Kaneohe Range Training facility has a Wildlife Management Area (WMA) in the top center of the impact area. The WMA is for the red-footed booby. The red-footed booby is not endangered but rather protected under the Migratory Bird Treaty Act. The presence of the birds cause restrictions. There are no tracers, illum or marking rounds permitted. The impact area is segmented in order to keep high explosive impact area as far from the WMA as possible. This is a severe restriction on crew served weapons training such as mortars, MK19 and rockets. SMAW tracers are not permitted.
Munitions Restrictions	Individual Level Training	🔴	Live-fire training using artillery or 81 mm mortar munitions are prohibited on MCBH ranges. This shortfall negatively impacts training for infantry weapons companies and artillery batteries. These units are forced to accomplish this training at other Military Service ranges in Hawaii.
	Unit Level Training	🔴	Same as above.
Noise Restrictions	Individual Level Training	🟡	Marine Corps Training Area Bellows is the only USMC owned maneuver training area in the Hawaiian Islands. Due to the close proximity of civilian housing on three sides of the training area the CO of MCBH has imposed "quiet hours" for the training area. Blank fire, CIED, helicopter landings, AAV operations training must not occur prior to 0700 on weekdays and cease at 2200. On weekends and holidays training that results in loud noise can't begin until 0900 and must end at 2200. Puuloa Range Training Facility (PRTF) is subject to Noise restrictions 0700 until 1700.
	Unit Level Training	🟡	Same as above.
Adjacent Land Use	Individual Level Training	🔴	Due to proximity of civilian housing and other community infrastructure, live-fire training is prohibited at Marine Corps Training Area Bellows (an amphibious and MOUT training area), and is limited at Kaneohe Bay. The urbanized character of the area constrains the development of ranges. As a result, training is generally confined to non-live-fire events or the use of static positions when firing small arms. Extremely limited ship-to-shore training areas are available. Community noise concerns, as noted above, are pervasive. Light sources in surrounding communities preclude night vision training for air crews. Convoy training on public roads is not feasible due to traffic congestion. All of these constraints reduce the effectiveness of training to some extent. As a result, much of this training is forced off-island to other-Service ranges.
	Unit Level Training	🔴	Same as above.
	MEU Level Training	🔴	Same as above.

Marine Corps Base Hawaii Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Cultural Resources	Individual Level Training	●	Some existing MCBH range areas are considered to be archaeologically or culturally sensitive and cannot be disturbed. In some instances, these sites restrict training or preclude expanding training facilities. Cultural resources impacts analyses address these issues, as appropriate.
	Unit Level Training	●	Same as above.
Range Transients	Individual Level Training	●	MCBH live-fire ranges are required to cease operations when civilian watercraft enter the confines of a range surface danger zone (SDZ), which extends into the ocean behind the impact area. These intermittent cease fire events disrupt and degrade live-fire training events. The cost to provide personnel to watch the area is approximately 3,000 man hours per year. To mitigate these training interruptions the following measures have been adopted: placing personnel to watch for boat traffic in range's SDZ; providing the ranges with radios to communicate with boat traffic; and directing available military vessels to intercept civilian boats in SDZs. In addition, updated notices to all mariners have been published.
	Unit Level Training	●	Same as above.

Figure 2-18 Marine Corps Capability and Encroachment Assessment Detail (continued)

MCB Camp Lejeune Assessment Details

Range Mission Description

MCB Camp Lejeune provides range capabilities to support training of Marines, Marine Corps units, MAGTF elements, and MAGTFs in the mission essential tasks of modern expeditionary warfare, including the training requirements of the Second Marine Expeditionary Force (II MEF) and other units assigned to the installation.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Individual Level Training	FMC	PMC	FMC		PMC	PMC	PMC	PMC	FMC	FMC		PMC	
Unit Level Training	PMC	PMC	FMC		PMC	NMC	PMC	PMC	FMC		PMC	PMC	
MEU Level Training	NMC	PMC	FMC		PMC	NMC	PMC	PMC	FMC		PMC	PMC	
MEB Level Training													

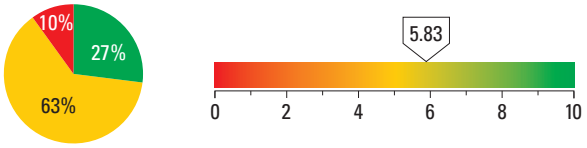
Legend: FMC PMC NMC

Encroachment Data

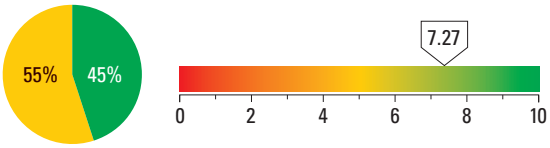
Mission Areas	Threatened & Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Individual Level Training	PMC	PMC	FMC		PMC	FMC	PMC	PMC	FMC	FMC	FMC	FMC
Unit Level Training	PMC	PMC	FMC		PMC	FMC	PMC	PMC	FMC	FMC	PMC	FMC
MEU Level Training	PMC	PMC	FMC		PMC	FMC	PMC	PMC	FMC	FMC	PMC	PMC
MEB Level Training												

Legend: Minimal Moderate Severe

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

Doctrinal range requirements are derived from the Operational Training Ranges Required Capabilities defined in MCRP 3-0C and the installation's RCMP. Additionally, MCB Camp Lejeune provided data for this assessment. Mission and Attribute areas in "White" were not assessed, or are not applicable to this installation. MEB-level training was not assessed. Critical deficits noted in available training land and airspace, that are impacting ability to conduct required training or develop sufficient ranges. Other significant deficits are lack of modern automated targets and threat systems. These capability shortfalls generally affect all levels of training at this range.

Summary Observations

The references for this assessment are the Operational Training Ranges Required Capabilities found in Marine Corps Reference Publication (MCRP) 3-0C and the installation's Range Complex Management Plan (RCMP). Mission and Attribute areas in "White" were not assessed, or are not applicable to this installation. MEB-level training was not assessed. Fifty-five percent of the training mission is moderately affected by encroachment. Camp Lejeune has considerable encroachment at all levels of training. MEU-level training is most severely constrained.

MCB Camp Lejeune Assessment Details

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Capability Scores	5.24	5.24	6.33	5.83	5.83

Impacts from key range capabilities shortcomings resulted in "Partially Mission Capable" designations for this installation during FYs 2012–2015 when assessing the installation's ability to support Marine Corps Task 1.7 (Provide Range and Training Areas that Support Operating Forces' Fire and Maneuver Training Mission Essential Tasks). Top capabilities and/or enhancements required to facilitate transition to "Fully Mission Capable" include (1) off-base MV-22 tactical training areas/landing zones, (2) MAGTF level instrumented MOUT capabilities, (3) upgraded and enhanced range safety and exercise command and control communications systems, (4) upgrade and modernize targets, (5) a combined arms maneuver course for individual, unit collective, and MEU level training, and (6) small arms ranges are generally 1970 vintage designs. These deficiencies have or will be addressed by Urgent Needs Statement (off base Tactical Training Areas supporting flight ops), PMC funded training system projects, ELMR fielding and MILCON.

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Encroachment Scores	7.58	7.58	7.58	7.58	7.27

Impacts from key encroachment factors resulted in "Partially Mission Capable" PMC designations for this installation during FYs 2012–2015 when assessing the installation's ability to support Marine Corps Task 1.7 (Provide Range and Training Areas that Support Operating Forces' Fire and Maneuver Training Mission Essential Tasks). Successful mitigation of key encroachment factors, including (1) threatened and endangered species/critical habitat, (2) munitions restrictions, (3) airspace restrictions, and (4) urban growth, are required to facilitate transition to a "Fully Mission Capable" designation.

MCB Camp Lejeune Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Unit Level Training	🟡	Limited available land training area limits options for siting/development of new ranges. Range planning seeks to maximize efficient use of available land for training. Expansion is not feasible. Landspace requirements include off installation areas for dedicated landing zone use by MV-22 aircraft.
	MEU Level Training	🔴	Land training area does not meet MCRP 3-0C requirements. Range planning seeks to maximize efficient use of available land for training. Expansion is not feasible.
Airspace	Individual Level Training	🟡	Airspace extends from surface to only 17,999 feet; does not extend 10NM beyond land area as necessary to avoid "spill outs" by military aircraft and incursions over ranges by civilian aircraft; supersonic flight is not authorized; fixed wing flight operations restricted. Urbanization issues (e.g., noise and light) limit use of training airspace that is not SUA (e.g., TERF), including extended range airspace areas required for MV-22 tactical training.
	Unit Level Training	🟡	Same as above.
	MEU Level Training	🟡	Same as above.
Targets	Individual Level Training	🟡	Not all ranges and targets meet Training Readiness/Individual Training Standards (T&R/ITS) training requirements for weapon systems - specifically for Infantry, AAV, and engineering systems; range area, distance, and feedback are limited; AAV waterborne requirement is not met; minimal urban/structural targets. Range Modernization/ Transformation (RM/T) program is addressing shortfalls consistent with available resources and Service priorities.
	Unit Level Training	🟡	Targets do not meet full T&R training requirements. A-G bombs limited to inert only. RM/T program is addressing shortfalls consistent with available resources and Service priorities.
	MEU Level Training	🟡	Targets not all set to T&R/ITS standards; A-G bombs limited to inert only. RM/T program is addressing shortfalls consistent with available resources and Service priorities.
Threats	Individual Level Training	🟡	RM/T program is addressing shortfalls consistent with available resources and Service priorities.
	Unit Level Training	🔴	OPFOR are provided by contracted theater specific role players who are not formally instructed on enemy tactics, techniques and procedures; however, role players provide a second best alternative.
	MEU Level Training	🔴	No dedicated OPFOR, normally makeshift and controlled by handlers and not trained to enemy tactics or techniques.
Scoring & Feedback System	Individual Level Training	🟡	The Tracking System takes Radar Inputs Only; RC—2-D Capability Only; EC&C—Operational Unit Owned and Operated; M&S—Only S-S Scenarios; Scoring—At least 1 range to Training Standard; Debrief/AAR—Primarily Observers/Hit-or-Miss Targets. RM/T program is addressing shortfalls consistent with available resources and Service priorities.
	Unit Level Training	🟡	Same as above.
	MEU Level Training	🟡	Same as above.
Infrastructure	Individual Level Training	🟡	Range communication systems do not support full spectrum of range control functions. Fielding of the ELMR system was to address this deficiency, however ELMR coverage areas do not include all range and training areas. Coordination of range control functions is conducted utilizing multiple, incompatible communication systems.
	Unit Level Training	🟡	Same as above.
	MEU Level Training	🟡	Same as above.
Collective Ranges	Unit Level Training	🟡	See comments above regarding land, airspace, range control, and target deficits. RM/T program is addressing shortfalls consistent with available resources and Service priorities.
	MEU Level Training	🟡	Same as above.

Figure 2-18 Marine Corps Capability and Encroachment Assessment Detail (continued)

MCB Camp Lejeune Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
MOUT Facilities	Individual Level Training	●	Development of new MOUT facilities has received focused attention throughout the Marine Corps, resulting in significant improvements; however deficiencies remain. RM/T program is continuing to address shortfalls consistent with available resources and Service priorities.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Individual Level Training	●	There are constraints on training due to the presence of Endangered Species Act (ESA) listed red-cockaded woodpecker (RCW), especially within the High Value Training Areas. These constraints are addressed with the Environmental Division and the USFWS as range development and maneuver training requirements are identified. Bombing operations are restricted to inert ordnance. Bombing with live ordnance has been shifted to other bases. Consultation with USFWS is ongoing concerning impacts of vegetation clearing within the G-10 Impact Area and RCW sites surrounding the impact area, potentially impacting further range development.
	Unit Level Training	●	Same as above. Additionally, constraints due to T&E species and wetlands confine tracked and armored vehicles such as tanks to existing trails, therefore maneuver training for armored vehicles cannot be accomplished above section/platoon level. Also, habitat and other environmental concerns have made range enhancements and site selection for new ranges difficult, and, in some instances, have forced the base to choose less desirable alternatives or limit range size/capability.
	MEU Level Training	●	Same as above. Additionally, as a result of the constraints on training due to the presence on beaches of ESA-listed sea turtles during breeding season (May–Oct). Use of much of the beach is restricted for amphibious and other types of training during this time. Dunes are "out of bounds" and must be maneuvered around. Resolution poses challenges.
Munitions Restrictions	Individual Level Training	●	Bombing operations at Camp Lejeune are restricted to inert ordnance, due in part to concerns about the noise levels from use of explosive ordnance. Additional constraints are due to restrictions associated with presence of ESA-listed RCW in the impact area and range areas; consultations ongoing with USFWS.
	Unit Level Training	●	Tank operations at SR-7 Range have been suspended since 1998 due to noise complaints from the nearby community (although noise levels were within DoD standards).
	MEU Level Training	●	The use of smoke at Camp Johnson is prohibited except when the wind blows to the south, to ensure smoke does not drift over Highway 17, which, due to recent construction is now quite close to the training areas at Camp Johnson. (CLUS App. D. Part II. 1 and 2).
Airspace	Individual Level Training	●	No fixed wing operations are allowed in R5303 and R5304. Ranges that the SUA supports cannot be active unless the area has aviation radar coverage. R5306D cannot be expanded due to civilian use of local beaches and Hwy 17 corridor. Ship to shore movements require aircraft to utilize airspace other than restricted areas to complete scenario based training. Increased civilian density in nearby areas leads to increase in noise complaints about aircraft flying tactical profiles during the day and night. As encroachment continues, airspace and operating hours will become more restrictive (MCAS New River adjacent to MCB Camp Lejeune).
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.
Noise Restrictions	Individual Level Training	●	Off-base noise concerns have resulted in the relocation of certain training venues such as the Tank live-fire range and steel cutting pit to more centralized areas of the installation which further reduces available training lands for non-noise producing training venues. The base's flexibility to absorb the requirements of future force structure and weapons training needs may be hampered by noise constraints. Remedies include ongoing community liaison.
	Unit Level Training	●	Same as above.
	MEU Level Training	●	Same as above.

MCB Camp Lejeune Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Adjacent Land Use	Individual Level Training		From 1990 to 2000, the population of the region of Camp Lejeune (Onslow County, NC) was essentially stable (1990 pop-149,838; 2000 pop.-150,335 [U.S. Census Bureau]). Between 2000 and 2008, the population surged, with an increase of over 10%. This trend continues, resulting in increased construction of housing and other urban infrastructure in the vicinity of the base and associated training areas and airspace. The changing land use increasingly impacts the base's flexibility to execute training. Examples of impacts include noise restrictions affecting munitions use and night training, increased light that conflicts with flight crew's use of night vision equipment, and alteration of flight pattern to avoid new housing areas. Actions to address include aggressive community liaison; however remedies remain elusive.
	Unit Level Training		Same as above.
	MEU Level Training		Same as above.
Wetlands	Unit Level Training		Regulatory constraints due to wetlands and T&E species confine tracked and armored vehicles such as tanks to existing trails; therefore, maneuver training for tanks and armored vehicles cannot be accomplished above the section/platoon level.
	MEU Level Training		Same as above.
Range Transients	MEU Level Training		Silting in the Intra-coastal Waterway causes civilian vessels (usually recreational) to sometimes run aground in inlets adjacent to or within the base (Browns and New River), leading to training disruptions. Remedies include ongoing activities with community liaison.

Figure 2-18 Marine Corps Capability and Encroachment Assessment Detail (continued)

MCB Camp Pendleton Assessment Details

Range Mission Description

MCB Camp Pendleton provides range capabilities to support training of Marines, Marine Corps units, MAGTF elements, and MAGTFs in the mission essential tasks of modern expeditionary warfare, including the training requirements of the First Marine Expeditionary Force (I MEF) units, 1st Marine Special Operations Battalion, Marine Corps Formal Schools, and other units assigned to the installation.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Individual Level Training	●	●	●		●	●	●	●	●	●		●	
Unit Level Training	●	●	●		●	●	●	●	●		●	●	
MEU Level Training	●	●	●		●	●	●	●	●		●	●	
MEB Level Training													

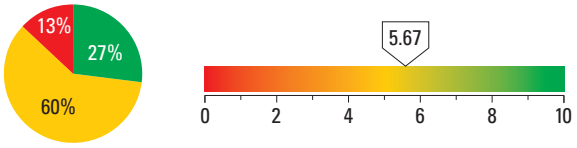
Legend: FMC ● PMC ● NMC ●

Encroachment Data

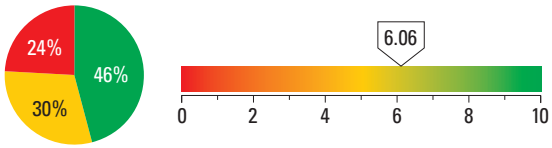
Mission Areas	Threatened & Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Individual Level Training	●	●	●		●	●	●	●	●	●	●	●
Unit Level Training	●	●	●		●	●	●	●	●	●	●	●
MEU Level Training	●	●	●		●	●	●	●	●	●	●	●
MEB Level Training												

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

Doctrinal range requirements are derived from Operational Training Ranges Required Capabilities (MCRP 3-0C). MCB Camp Pendleton RCMP provides data for this assessment. Attribute areas in "White" were not assessed, or are not applicable to this installation. Deficits noted in available training land and airspace, and lack of threat capabilities, automated targets, and scoring and feedback systems. Capability shortfalls generally affect all levels of training, especially unit and MEU level training.

Summary Observations

The references for this assessment are Operational Training Ranges Required Capabilities (Marine Corps Reference Publication [MCRP] 3-0C) and the Camp Pendleton Range Complex Management Plan (RCMP). Mission and Attribute areas in "White" were not assessed, or are not applicable to this installation. Regulatory constraints on the use of wet lands including riverine areas, adjacent land use, and cultural resources, in order are the most critical enchroachment factors that reduce training flexibility and realism. Twenty-four percent of the training mission is severely affected by encroachment, and 30% is moderately affected. Urbanization trends in region will continue to exert ever-increasing pressure on training capabilities. The MEU level training level mission area is most impacted. Development of the MCIWEST-MCB Camp Pendleton ECP, which includes the base, is complete.

MCB Camp Pendleton Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	4.52	4.52	5.67	5.83	5.83	**Encroachment Scores**	6.67	6.67	6.82	6.06	6.06
Impacts from key range capabilities shortcomings resulted in "Partially Mission Capable" designations for this installation during FYs 2012–2015 when assessing the installation's ability to support Marine Corps Task 1.7 (Provide Range and Training Areas that Support Operating Forces' Fire and Maneuver Training Mission Essential Tasks). The top two capabilities and/or enhancements required to facilitate transition to "Fully Mission Capable" include (1) level loaded funding for the installation range program line base operating sustainment (BOS) to provide for range improvements and range maintenance real property sustainment, (2) upgrade of target systems and shoot houses.						Impacts from key encroachment factors resulted in PMC designations for this installation during FY2008–FY2011, when assessing the installation's ability to support Marine Corps Task 1.7 (Support Maneuver through the Provision of Training Areas) and Marine Corps Task 3.3 (Support Fires through the Provision of Ranges and Training Areas). Successful mitigation of key encroachment factors, including (1) urban growth and Adjacent Land Use, (2) Threatened & Endangered Species, (3) Wetlands, and (4) Cultural Resources, are required to facilitate transition to a FMC designation.					

MCB Camp Pendleton Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Unit Level Training	🟡	Land training area does not meet operational training ranges required capabilities MCRP 3-0C requirements. The size of the main impact area limits or prohibits the use of certain weapons, such as HIMARS, fixed-wing bombs, and Hellfire missiles. Numerous units are compressed into the same training areas, which can reduce realism. Range planning seeks to maximize efficient use of available land for training. During the past seven years, the base has converted previously leased agricultural areas for training areas. Expansion beyond the base border is not feasible.
	MEU Level Training	🔴	Same as above; plus MEU amphibious operations are limited to a small section of Camp Pendleton's beach. The limited beach areas available for training, limit flexibility and reduce training realism. The base is pursuing initiatives to open up some of the restricted beach areas for training.
Airspace	Individual Level Training	🟡	Lateral airspace does not extend 10NM beyond land area as necessary to avoid "spill outs" by military aircraft and incursions over ranges by civilian aircraft; insufficient lateral airspace for combined arms training in accordance with MCRP 3-0C. The airspace generally does not support MV-22 LZ operations, which require a large area to support tactical approaches. Fixed-wing aircraft supporting close air support training must fly a very tight pattern to avoid spill outs, which reduces training effectiveness for the aircrew. Expanding Camp Pendleton's SUA in the congested Southern California airspace is not feasible.
	Unit Level Training	🟡	Same as above. In addition, artillery is limited to 40 hours per year to conduct high angle fires in R-2503C. UAS training has increased significantly in the past year at Camp Pendleton with numerous ground units operating Group 1 UAS and the transfer of VMU-4 Detachment, which operates RQ-7B Shadow, Group 3 UAS.
	MEU Level Training	🟡	Same as above.
Targets	Unit Level Training	🟡	There are a number of required ranges and target areas that need modernization to meet USMC training requirements. These shortfalls span all levels of unit training. Shortfalls include infantry and mechanized automated ranges and targets, battle-course ranges and targets, assault/breaching/demolition ranges, and others. These shortfalls limit realistic training opportunities. Competition for the available automated battle-course ranges is keen, which may preclude certain units from conducting such training due to predeployment training cycles. The Marine Corps RM/T program is addressing these shortfalls through range investments consistent with available resources and Service priorities.
	MEU Level Training	🟡	Same as above.
Threats	Individual Level Training	🟡	Camp Pendleton requires a comprehensive electronic training environment supporting basic through advanced collective training. The capability must simulate neutral, hostile, and non-hostile ground, air defense, and airborne weapons systems; OPFOR C2; neutral, hostile, and non-hostile cryptologic systems; and hostile jamming. This shortfall limits training realism, because Marines are not exposed to electronic threats and do not learn how to identify and work around them. There are efforts underway to study OPFOR capability alternatives and to develop shortfall strategies. Role player program (not a program-of-record) is a significant training enhancement.
	Unit Level Training	🟡	Same as above. Shortfalls in threat capabilities have most significant impact on more complex training events.
	MEU Level Training	🔴	Same as above. Shortfalls in threat capabilities have most significant impact on more complex training events.

Figure 2-18 Marine Corps Capability and Encroachment Assessment Detail (continued)

MCB Camp Pendleton Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Scoring & Feedback System	Individual Level Training	🟡	Many existing ranges lack modern scoring and feedback systems. Without feedback, Marines often do not know if they are employing their weapons effectively. The Marine Corps RM/T program is addressing these shortfalls through range investments consistent with available resources.
	Unit Level Training	🔴	Unit and MEU-level training requires enhanced instrumentation for training event reconstruction, debriefing, and replay. Camp Pendleton generally lacks such capabilities. Without feedback, units do not know how effective their tactics and techniques are, nor do they have the opportunity to correct mistakes. The Marine Corps RM/T program continues to analyze and address these shortfalls through range investments consistent with available resources. Construction of a state-of-the-art large instrumented MOUT facility has mitigated the issue in one area, but an extensive number of ranges still do not have scoring and feedback systems.
	MEU Level Training	🔴	Same as above.
Infrastructure	Unit Level Training	🟡	Many of the roads in the training areas are unimproved dirt roads, which are susceptible to rutting, surface erosion, and wash out during rainy periods. Large sections of the training area become inaccessible during rainy periods due to road closures and damage, which condenses training to the parts of the Base that are still accessible. The base has been working an EA to improve the training road network, which when complete will allow the base to begin to improve the roads.
	MEU Level Training	🟡	Same as above.
Range Support	Individual Level Training	🟡	Range radio communication system failures at times have caused the cessation of training. Not all of the ranges have telephone capability. The installation does not have exercise C2 circuits or secure communications capable for range control. If the range control radio system fails, training is stopped until the problem is fixed; interruptions to training is very disruptive for the units effected. The Marine Corps Range RM/T program continues to analyze and address these shortfalls through range investments consistent with available resources.
	Unit Level Training	🟡	Same as above.
	MEU Level Training	🟡	Camp Pendleton lacks comprehensive exercise control capabilities integrated with range control functions. Without an established exercise control function, units will experience differing levels of control effectiveness. The Marine Corps RM/T program continues to analyze and address these shortfalls through range investments consistent with available resources.
Collective Ranges	Unit Level Training	🟡	See comments above regarding land, airspace, range control, target, and scoring deficits. Units have limited opportunities to conduct more complex training integrating maneuver with the employment of organic weapons and combined arms fires. The Marine Corps RM/T program continues to analyze and address these shortfalls through range investments consistent with available resources.
	MEU Level Training	🟡	Same as above.
MOUT Facilities	Unit Level Training	🟡	Numerous small MOUT facilities has received focused attention throughout the Marine Corps, resulting in significant improvements; however deficiencies remain.The small MOUTs generally support platoon and below level training; but for company and battalion level training, the MOUT facilities on Base are much smaller than areas they might have to operate during contingency or combat operations. The RM/T program is continuing to analyze and address shortfalls through range investments consistent with available resources.
	MEU Level Training	🟡	Camp Pendleton does not have an expansive MOUT facility, as identified in MCRP 3-0C, to support MEU operations. The MEUs conducting MOUT training at the Base are forced to train in facilities that are significantly smaller and less complicated than areas they might have to operate during contingency operations while on deployment. RM/T program is continuing to analyze and address shortfalls through range investments consistent with available resources.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Individual Level Training	🟡	Constraints on training due to presence of multiple ESA-listed species include inability to conduct training that requires digging/earth moving; limitations on use of military vehicles in some training areas; limitations on training use of beaches; of 17 miles of coast, 6,000 yards are available for training use, and only approximately 1,500 linear yards of beach are currently available for non-restricted amphibious operations due to ESA and other regulatory constraints, and encumbrances such as long-term leases. T/E species related training restrictions limit training realism and tend to segment training events; in some cases, restrictions may ingrain bad habits, such as not digging when in a defensive position. The base coordinates and consults extensively with U.S. Fish and Wildlife Service, with objective of reducing constraints on training resulting from application of ESA.
	Unit Level Training	🟡	Same as above.
	MEU Level Training	🔴	Same as above.

MCB Camp Pendleton Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Spectrum	Individual Level Training		Competition for access to and use of frequency spectrum has resulted in moderate to severe impacts on some training activities, including training requiring use of satellite communications frequencies, and training with UAS. In some instances, the U.S. Government is making portions of the frequency spectrum currently controlled by DoD available to the public and commercial activities. Spectrum restrictions can limit the number of units conducting UAS operations, which can in turn reduce training opportunities for individuals. The Marine Corps as well as DoD addresses this problem at the Service and Department level.
	Unit Level Training		Same as above.
	MEU Level Training		Same as above, with greater impacts during MEU level training exercises, which include much satellite communication.
Airspace	Individual Level Training		Intense competition and pressure from commercial and general aviation for access to and use of airspace in the critically overcrowded, Southern California coastal airspace corridors threatens to impact military aviation and live-fire operations in ranges and training areas. These concerns are addressed in inter-agency dialogue with the FAA.
	Unit Level Training		Same as above, with greater effects on training events, such as high angle artillery fires, MV-22 tactical approaches to landing zones, and fixed-wing close air support. There are limited opportunities for artillery units to conduct high angle fires; per agreement with the FAA, they are limited to 40 hours per year. The horizontal boundaries of R-2503 force MV-22 aircrew to seek alternate training venues to conduct tactical approaches. Similarly, fixed-wing aircrews supporting close air support training are forced to fly a very tight pattern, which significantly reduces flexibility and realism.
	MEU Level Training		Same as above.
Adjacent Land Use	Individual Level Training		High density urban infrastructure contiguous to MCB Camp Pendleton inhibits the ability to train with night vision goggles (NVGs) and constrains training in some areas due to noise considerations. Urbanization of the region puts pressure on off-installation natural resources (including sensitive and ESA-listed species), potentially increasing the base's share of remaining regional resources with increased management constraints affecting training. Regional growth affects access to off installation lands for training, and inhibits NVG training by aircraft crews when transiting from offshore littoral areas or base to other training areas or installations within the region. Base lands are encumbered by long-term leasing outgrants to the State of CA and a nuclear power plant facility. In addition, Trestles, a part of the leased San Onofre State Beach, is in the process of being nominated to the National Historic Register. These impacts reduce training effectiveness and tend to segment training exercises. Initiatives to reclaim training land formerly used for agricultural leases have been executed. Buffer-lands acquisition program is being executed. The toll-road revision proposals that create more training impacts beyond the only ROW authorized for study and consideration. Expansion is not feasible.
	Unit Level Training		Same as above. Location of Interstate 5 and the railroad tracks preclude NSFS training or external load ship-to-shore aviation support training.
	MEU Level Training		Same as above.
Cultural Resources	Individual Level Training		Constraints on training due to the presence of cultural resources include inability to conduct training that requires digging/earth moving in some training areas; cultural resources on beaches result in limitations on use, which are cumulative with other limitations such as ESA-based restrictions. These constraints limit training flexibility and realism. The base coordinates and consults with the State Historic Preservation Office, with the objective of reducing constraints on training.
	Unit Level Training		Same as above. Impacts on training from cultural resource constraints are more severe for complex unit-level and MEU-level training.
	MEU Level Training		Same as above.
Wetlands	Individual Level Training		Regulatory constraints on use of wetlands for training impose limitations on uses of riverine areas, some watershed areas, and areas that contain vernal pools. These limitations reduce training flexibility and realism. The base coordinates and consults with the U.S. Army Corps of Engineers, with the objective of reducing constraints on training.
	Unit Level Training		Same as above.
	MEU Level Training		Same as above.

Figure 2-18 Marine Corps Capability and Encroachment Assessment Detail (continued)

MCB Quantico Assessment Details

Range Mission Description

The MCB Quantico Training Range Complex mission is to provide high quality individual and unit training to Marine Corps Formal schools and Marine units in the National Capital Region. As a secondary priority, the MCB Quantico Training Range Complex supports other training operations.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Individual Level Training	●	●			●	●	●	●	●	●		●	
Unit Level Training	●	●			●	●	●	●	●		●	●	
MEU Level Training													
MEB Level Training													

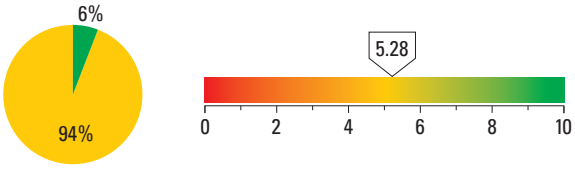
Legend: FMC ● PMC ● NMC ●

Encroachment Data

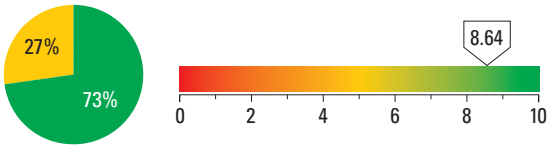
Mission Areas	Threatened & Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Individual Level Training	●	●	●		●	●	●	●	●	●	●	●
Unit Level Training	●	●	●		●	●	●	●	●	●	●	●
MEU Level Training												
MEB Level Training												

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

Doctrinal range requirements are derived from Operational Training Ranges Required Capabilities (MCRP 3-0C). Mission and attribute areas in "White" were not assessed, or are not applicable to the MCB Quantico Range Complex. MCB Quantico generally has the capability to support required training; however, unit-level training capability is limited to platoon-sized and smaller units. There are capability shortfalls throughout all capability attributes; however, they do not preclude meeting programs of instruction for TBS and IOC. Capability shortfalls are mitigated by workarounds, training procedure alternatives, and deployments to other locations that offer more range and training area capabilities.

Summary Observations

The range complex mission is moderately impacted by encroachment on airspace, noise, and adjacent land use (urban growth). Airspace, Adjacent Land Use, and Noise Restrictions are the encroachment factors with greatest impact on the training mission. Urban growth in the vicinity of the range complex increasingly affects training in support of initial officer training at The Basic School, and the Infantry Officer Course. Cantonment growth is reducing the utility of some range areas. Encroachment assessment is derived from the MCB Quantico Range Complex Management Plan, November 2011. The MCB Quantico Encroachment Control Plan (ECP) is being implemented.

Historical Information, Results, and Future Projections

Calendar Year	2008	2009	2010	2011	2012
Capability Scores	6.43	6.43	6.67	6.11	6.11

Impacts from key range capabilities shortcomings resulted in "Partially Mission Capable" designations for this installation during FYs 2012–2015 when assessing the installation's ability to support Marine Corps Task 1.7 (Provide Range and Training Areas that Support Operating Forces' Fire and Maneuver Training Mission Essential Tasks). The Top Three capabilities and/or enhancements required to facilitate transition to "Fully Mission Capable" include (1) instrumented MOUT capabilities, (2) fully resourced range control facility, and (3) upgraded and modernized targets.

Historical Information, Results, and Future Projections

Calendar Year	2008	2009	2010	2011	2012
Encroachment Scores	9.09	9.09	7.27	7.27	7.27

Impacts from key encroachment factors resulted in "Partially Mission Capable" designations for this installation during FYs 2012–2015 when assessing the installation's ability to support Marine Corps Task 1.7 (Provide Range and Training Areas that Support Operating Forces' Fire and Maneuver Training Mission Essential Tasks). Successful mitigation of key encroachment factors, including (1) urban growth and adjacent land use, (2) airspace restrictions, and (3) noise restrictions are required to facilitate transition to a "Fully Mission Capbable" designation.

MCB Quantico Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Individual Level Training	●	The range has overlapping SDZs (Surface Danger Zones), live-fire range orientation conflicts, and a single, centralized dudded impact area that affects scheduling and suite of ranges usage. These shortfalls reduce range access, prohibit certain training events, segment training, and reduce realism. The RM/T program is addressing shortfalls consistent with available resources.
	Unit Level Training	●	The land area is limited in size for unit-level training. Land areas do not include beachfront. MOUT facilities are limited both in land area and in configuration (e.g., central urban area, outlying suburban area, outlying facilities/villages, and major avenues of approach). The lack of live-fire MOUT facilities requires units to deploy to MCAGCTC Twentynine Palms for comprehensive MOUT training including live-fire. MOUT shortfalls prohibit certain training events, reduce realism, increase personnel tempo, and increase O&M costs. The RM/T program is addressing shortfalls consistent with available assets. Quantico has a multi phased program that provides a MOUT, mobile MOUT with a system of interconnecting roads and trails, and an urban sprawl.
Airspace	Individual Level Training	●	Airspace is sufficient in size to meet Quantico's infantry training requirements. Airspace has to be scheduled 30 days in advance which provides little flexibility for late changes in schedule due to weather or other operational factors. Scheduling lead times effectively limit access to airspace in some cases where rescheduling is required due to changing operational requirements and cancellations. This shortfall reduces range access, prohibits certain training events, and reduces realism. The RM/T program is addressing shortfalls consistent with available resources.
	Unit Level Training	●	Same as above.
Targets	Unit Level Training	●	Additional stationary and moving target ranges would be required to support company level and higher operations. The ability to install automated ranges to support company level and higher training is constrained by available landspace. The RM/T program is addressing shortfalls consistent with available assets.
Threats	Individual Level Training	●	Role players are limited to organic assets and to on-foot presentations. There are no dedicated role players/ threat forces. Lack of adequate OPFOR presentations reduces decision-making, interaction, and feedback training opportunities. Training requiring more robust OPFOR presentation must be conducted at MCAGCTC Twentynine Palms or other training locations such as NAB Little Creek and MCB Camp Lejeune. This shortfall prohibits certain training events, reduces training realism, increases personnel temp, and increases O&M costs. The RM/T program is addressing shortfalls consistent with available resources.
	Unit Level Training	●	Same as above.
Scoring & Feedback System	Individual Level Training	●	SESAMS (Special Effects Small Arms Marking System) provides real-time feedback for force-on-force close range training. There is manual scoring for the KD targets. Steel targets provide some audible feedback. Auto targets have a limited feedback capability that provides the number of hits. There is not a location of hits or a target shoot-back capability. There are limited scoring capabilities limit real-time feedback and assessment opportunities. Shortfall impacts vary based on unit training objectives. Individual level training does not require RTKN. Shortfalls reduce training realism, segment training, hinder proper instruction, and affect efficient/effective training. The RM/T program is addressing shortfalls consistent with available resources. Current projects include an audio-visual feedback system and additional tracking systems for personnel and vehicles.
	Unit Level Training	●	Same as above.
Infrastructure	Individual Level Training	●	Condition of unimproved roadways and tank trails have at times limited the use of transportation assets to the ranges. Limitations on transportation assets caused by road and trail conditions preclude efficient training in the affected areas. The RM/T program is addressing shortfalls consistent with available resources.
	Unit Level Training	●	Same as above.
Range Support	Individual Level Training	●	The range complex has limited Command and Control (C2) capability for exercise and training support. Limited C2 reduces exercise monitoring and management control. The RM/T program is addressing shortfalls consistent with available resources.
	Unit Level Training	●	Same as above.
Small Arms Ranges	Individual Level Training	●	MCB Quantico ranges lack optimal targets and training feedback systems. Limited targetry reduces training realism and effectiveness and training assessment capability. The RM/T program is addressing shortfalls consistent with available resources.
Collective Ranges	Unit Level Training	●	MCB Quantico has two live-fire and maneuver ranges capable of supporting platoon level training. The base is incapable of supporting company-level live-fire training. Platoon range and squad-level ranges have a limited feedback capability that provides the number of hits. There is not a location of hits or a target shoot-back capability. These limitations reduce training realism and effectiveness, and training assessment capability. The RM/T program is addressing shortfalls consistent with available resources.

Figure 2-18 Marine Corps Capability and Encroachment Assessment Detail (continued)

MCB Quantico Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
MOUT Facilities	Individual Level Training	●	MOUT facilities are limited both in land area and in configuration (e.g., central urban area, outlying suburban area, outlying facilities/villages, and major avenues of approach). Lack of live-fire MOUT facilities requires units to deploy to MCAGCTC Twentynine Palms for comprehensive MOUT training including live-fire. MOUT shortfalls prohibit certain training events, reduce realism, increase personnel tempo, and increase O&M costs. The RM/T program is addressing shortfalls consistent with available assets. Quantico has a multi phased program that provides a MOUT, mobile MOUT with a system of interconnecting roads and trails, and an urban sprawl.
	Unit Level Training	●	Same as above

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Airspace	Individual Level Training	●	R-6608 A/B/C extends from the surface to 10,000 feet which accommodates all ordnance utilized on the range. Scheduling of all airspace above 3,000 feet requires a 10-day advance notice. Envisioned plans by the Stafford Regional Airport (SRA) Authority to construct a precision instrument approach to SRA Runway 15 would directly impact the utilization of the Demo Military Operations Areas (MOAs) and R-6608. Scheduling shortfalls limit the ability to reschedule events cancelled due to weather, equipment failures or other issues. Other shortfalls include reduced range access,and restricted flight altitudes either restricted or prohibited some training events due to R-6608 A&C not covering the northern portion of the training area. MV-22 high speed approach and high speed maneuver capability is limited due to the size of the airspace and vertical hazards associated with live fire training. The Community Plans & Liaison Officer (CPLO), Marine Corps Air Facility (MCAF) Air Traffic Control (ATC), and RMB continue to monitor the development of SRA through outreach and planning to mitigate future airspace conflicts.
	Unit Level Training	●	Same as above.
Noise Restrictions	Individual Level Training	●	Noise sensitive areas in the vicinity of urban development along the Route 610 Corridor in Stafford County have forced the MCB Quantico Range Complex to restrict some live-fire and explosives training in the vicinity of these densely populated urban areas. Established "quiet hours," from 2200–0600 daily, prohibit the release and use of high explosive munitions (artillery, mortars, demolitions, and air delivered munitions) in all training areas, ranges, and impact areas for all night time training and operations. Restrictions are expected to increase in the future. This reduces usage days, prohibits certain operations and training events, complicates night and all-weather operations and training, increases personnel tempo, and increases costs or risks. The CPLO, Public Affairs Officer (PAO), and RMB continue to monitor noise impacts within the surrounding communities and follows established outreach guidelines and plans established within the ECP to mitigate future development which may impact training and operations within the range complex.
	Unit Level Training	●	Same as above.
Adjacent Land Use	Individual Level Training	●	Extensive residential development along the Route 610 corridor in Stafford County has put residents within close proximity (less than 3 km) of the Range Complex's ranges, impact areas, training areas, and SUA. Noise complaints from homeowners in the area are a recurring event as noise effects from live-fire and training operations reverberate throughout the area. MCB Quantico has established "quiet hours," from 2200–0600 daily, when all live-fire and aviation operations are prohibited. This reduces usage days, prohibits certain operations and training events, complicates night and all-weather operations and training, increases personnel tempo, increases costs or risks. The CPLO, PAO, and RMB continue to monitor noise impacts within the surrounding communities and follows established outreach guidelines and plans established within the ECP to mitigate future development which may impact training and operations within the range complex.
	Unit Level Training	●	Same as above.

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Figure 2-18 Marine Corps Capability and Encroachment Assessment Detail (continued)

MCAGCC Twentynine Palms Assessment Details

Range Mission Description

The Marine Corps Air Ground Combat Center (MCAGCC) Twentynine Palms provides range capabilities to support training of Marines, Marine Corps units, MAGTF elements, and MAGTFs in the mission essential tasks of modern expeditionary warfare, including Service-directed pre-deployment training exercises and training of units of the First Marine Expeditionary Force (I MEF) that are assigned to the installation. The Marine Air Ground Task Force Training Command (MAGTFTC) maintains its headquarters at MCAGCC Twentynine Palms.

Capability Data

Mission Areas	Capability Attributes												
	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
Individual Level Training	FMC	FMC			FMC	FMC	FMC	FMC	FMC	FMC		FMC	
Unit Level Training	FMC	FMC			FMC	FMC	FMC	FMC	FMC		FMC	FMC	
MEU Level Training	FMC	PMC			FMC	FMC	FMC	PMC	FMC		FMC	FMC	
MEB Level Training	PMC	NMC			PMC	PMC	PMC	PMC	PMC			FMC	

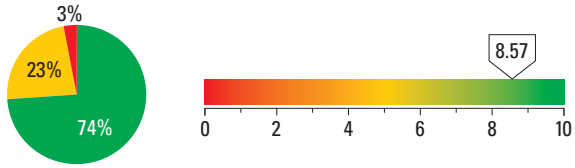
Legend: FMC, PMC, NMC

Encroachment Data

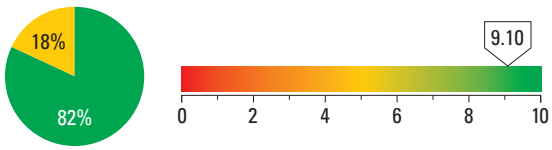
Mission Areas	Encroachment Factors											
	Threatened & Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Individual Level Training	Minimal	Minimal	Moderate		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal		Minimal
Unit Level Training	Minimal	Minimal	Moderate		Moderate	Minimal	Minimal	Minimal	Minimal	Minimal		Minimal
MEU Level Training	Minimal	Minimal	Moderate		Moderate	Minimal	Minimal	Minimal	Minimal	Minimal		Minimal
MEB Level Training	Minimal		Moderate		Moderate	Minimal	Minimal	Minimal	Minimal	Minimal		Minimal

Legend: Minimal, Moderate, Severe

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

Doctrinal range requirements are derived from Operational Training Ranges Required Capabilities (MCRP 3-0C). Deficits noted in available training landspace and airspace, impacting ability to conduct required service-level training of large Marine Air ground Task Forces (MAGTFs). Land and Airspace expansion initiative expected to significantly enhance range complex for MAGTF training.

Summary Observations

The references for this assessment are Operational Training Ranges Required Capabilities (Marine Corps Reference Publication [MCRP] 3-0C) and RCMP. Nearly 18% of the range/range complex mission is moderately impacted by encroachment factors. Spectrum and Airspace are the encroachment factors moderately impacting the training mission; impacts affect all levels of training. Encroachment Control Plan (ECP) has been completed and is being executed.

Historical Information, Results, and Future Projections

Calendar Year	2008	2009	2010	2011	2012
Capability Scores	5.63	5.63	6.03	6.03	6.03

Impacts from key range capabilities shortcomings resulted in PMC designations for this installation during FYs 2008–2012 when assessing the installation's ability to support Marine Corps Task 1.7 (Provide Range and Training Areas that Support Operating Forces' Fire and Maneuver Training Mission Essential Tasks). Top three capabilities and/or enhancements required to facilitate transition to FMC include (1) MEB level combined arms live fire and maneuver training capability, (2) exercise command and control battle staff training capability, and (3) Airspace Expansion.

Historical Information, Results, and Future Projections

Calendar Year	2008	2009	2010	2011	2012
Encroachment Scores	9.00	9.00	9.10	9.10	9.10

Impacts from key encroachment factors resulted in "Partially Mission Capable designations for this installation during FYs 2012–2015 when assessing the installation's ability to support Marine Corps Task 1.7 (Provide Range and Training Areas that Support Operating Forces' Fire and Maneuver Training Mission Essential Tasks). Successful mitigation of key encroachment factors, including (1) airspace restrictions, and (2) frequency spectrum limitations, are required to facilitate transition to a "Fully Mission Capable" designation.

MCAGCC Twentynine Palms Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	MEB Level Training	🟡	BLM land has been acquired, but it requires three years of tortoise surveying for translocation in the spring of 2016. The range still needs to acquire private parcels and mines. MEB level training remains constrained until these action have been completed. MEB level training will be conducted within the previous MCAGCC boundaries until actions complete in the spring of 2016.
Airspace	MEU Level Training	🟡	Airspace expansion initiative is improving capability, but remaining deficiencies do not support MEU level training.
	MEB Level Training	🔴	There is a requirement for airspace ISO of the Johnson Valley land acquisition initiative. USMC currently unable to conduct training without required airspace. Airspace proposals have been submitted to FAA with completion anticipated in 2016.
Targets	MEB Level Training	🟡	Additional required target assets have not been programmed to support operations on new lands.
Threats	MEB Level Training	🟡	Additional required threat assets have not been programmed to support operations on new lands.
Scoring & Feedback System	MEB Level Training	🟡	Additional required scoring and feedback capability has not been programmed to support operations in new lands.
Infrastructure	MEU Level Training	🟡	This is a combined exercise control facility. Exercise control facilities are insufficient for large-scale MAGTF and Joint exercises. A MILCON project has been submitted.
	MEB Level Training	🟡	Same as above.
Range Support	MEB Level Training	🟡	Additional required range support has not been programmed to support operations in new lands.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Spectrum	Individual Level Training	🟡	Congested frequency spectrum limits frequency availability/deconfliction. This affects all levels of training through frequency spectrum interference. Assessment and mitigation planning actions and milestones being implemented.
	Unit Level Training	🟡	Same as above.
	MEU Level Training	🟡	Same as above.
	MEB Level Training	🟡	Same as above.
Airspace	Unit Level Training	🟡	Congested regional airspace surrounds Special Use Airspace (SUA) supporting MCAGCC ranges, resulting in FAA pressure for access to SUA. Interruptions and modifications of training result in capabilities of fixed wing aviation assets to ingress/egress in tactical profiles over range areas. Initiative to expand airspace access is ongoing, USMC in coordination with FAA in context of land expansion.
	MEU Level Training	🟡	Same as above.
	MEB Level Training	🟡	Same as above.

Figure 2-18 Marine Corps Capability and Encroachment Assessment Detail (continued)

MCAS Yuma/Bob Stump Assessment Details

Range Mission Description

MCAS Yuma/Bob Stump Training Range Complex provides range capabilities to support training of Marines, Marine Corps units, MAGTF elements, and MAGTFs in the mission essential tasks of modern expeditionary warfare, including Service-directed aerial weapons training exercises and training of units of the Third Marine Air Wing (3d MAW) that are assigned to or extensively utilize the installation.

Capability Data

Mission Areas	Capability Attributes												
	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
Individual Level Training	FMC	PMC			PMC	PMC	PMC	FMC	FMC	FMC		PMC	
Unit Level Training	FMC	PMC			PMC	PMC	PMC	FMC	FMC		FMC	PMC	
MEU Level Training	FMC	PMC			PMC	PMC	PMC	FMC	FMC		FMC	PMC	
MEB Level Training													

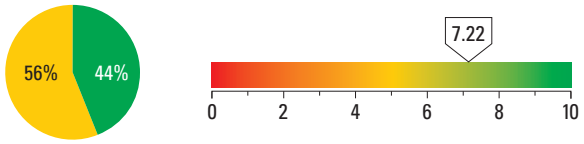
Legend: FMC, PMC, NMC

Encroachment Data

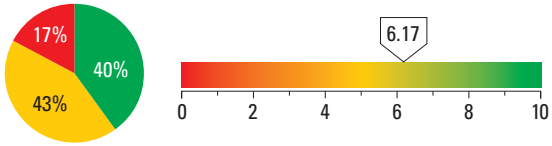
Mission Areas	Encroachment Factors											
	Threatened & Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Individual Level Training	Moderate	Moderate	Severe		Moderate	Minimal	Moderate	Moderate	Minimal	Minimal		Minimal
Unit Level Training	Severe	Moderate	Severe		Moderate	Minimal	Moderate	Moderate	Minimal	Minimal		Minimal
MEU Level Training	Severe	Moderate	Severe		Moderate	Minimal	Moderate	Moderate	Minimal	Minimal		Minimal
MEB Level Training												

Legend: Minimal, Moderate, Severe

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

Doctrinal range requirements are derived from Operational Training Ranges Required Capabilities (MCRP 3-0C). Bob Stump Training Range Complex RCMP provides data for this assessment. Mission and Attribute areas in "White" were not assessed, or are not applicable to this installation. The Yuma Range Complex includes the Barry M. Goldwater Range (West), the Chocolate Mountains Aerial Gunnery Range (CMAGR) and additional designated airspace areas. In addition to supporting Marine Corps-specific training, Marine Corps ranges in the CMAGR are used extensively by Naval Special Warfare (NSW) commands. Significant deficits are noted in available airspace, impacting ability to conduct required training or develop sufficient ranges. Other significant deficits are lack of modern automated targets, threat systems, and scoring and feedback systems. Capability shortfalls generally affect all levels of training. The FY2014 NDAA transferred the administrative jurisdiction of the DOI lands to the Department of the Navy. This Congressional action resulted in the retention of this premier air and ground range.

Summary Observations

Sixty percent of the range/range complex mission is moderately or severely impacted by encroachment factors. Encroachment factors with greatest impact on training mission are Spectrum and Threatened and Endangered Species. Noise concerns and airspace availability also are significant encroachment impacts on training. The Encroachment Control Plan (ECP) has been completed and is being executed. The references for this assessment are Operational Training Ranges Required Capabilities (Marine Corps Reference Publication [MCRP] 3-0C) and Range Complex Management Plan (RCMP). Mission and Attribute areas in "White" were not assessed, or are not applicable to this installation.

MCAS Yuma/Bob Stump Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	5.28	5.28	6.67	6.67	6.67	**Encroachment Scores**	5.25	5.25	6.17	6.17	6.17
Impacts from key range capabilities shortcomings resulted in "Partially Mission Capable" designations for this installation during FYs 2012–2015 when assessing the installation's ability to support Marine Corps Task 1.7 (Provide Range and Training Areas that Support Operating Forces' Fire and Maneuver Training Mission Essential Tasks). Top three capabilities and/or enhancements required to facilitate transition to "Fully Mission Capable" include (1) available airspace, (2) modern automated Targets, and (3) Scoring and Feedback systems.						Impacts from key encroachment factors resulted in "Partially Mission Capable" designations for this installation during FYs 2012–2015 when assessing the installation's ability to support Marine Corps Task 1.7 (Provide Range and Training Areas that Support Operating Forces' Fire and Maneuver Training Mission Essential Tasks). Successful mitigation of key encroachment factors, including (1) spectrum, (2) threatened and endangered species, and (3) noise restrictions and adjacent land use, are required to facilitate transition to a "Fully Mission Capable" designation.					

MCAS Yuma/Bob Stump Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Airspace	Individual Level Training		Airspace requirements for individual training are fully met within the range complex with the exception of the objective requirement of 30 NM x 60 NM for EW ranges.
	Unit Level Training		The objective requirement for a 40 NM x 60 NM AAW and 30 NM x 60 NM EW range is not met within the range complex. The altitude blocks are not consistent causing the airspace to be fragmented. Airspace has limited availability to non-participating units during WTI, other Service-level pre-deployment training exercises, and unit detachments to MCAS Yuma. Efforts ongoing to improve airspace scheduling and management to optimize airspace availability and utilization. Marine Corps is coordinating with FAA to provide enhanced airspace for larger training events. Also evaluating potential of MOA with Luke AFB regarding use of R-2301E.
	MEU Level Training		Same as above.
Targets	Individual Level Training		The fidelity and quality of tactical targets are limited for training of aviation ground support units; however. The RM/T program is addressing shortfalls consistent with available resources. Planned upgrades include investment in welded and pop-up targets; buildings for convoy operations and enhanced marksmanship program (EMP) training.
	Unit Level Training		The type, quality, fidelity, and quantity of targets are inadequate. There is a limited number of JDAM targets. No targets with IR signature capability. Urban Close Air Support range (Yodaville) does not provide a realistic urban training environment for helicopter gunnery operations. The RM/T program is addressing shortfalls consistent with available resources.
	MEU Level Training		Same as above.
Threats	Individual Level Training		Shortfalls in threat aircraft include: no rotary-wing threat aircraft, no aircraft with A-A radar missile presentations, and radar capability is limited on the F-5. Solutions or workarounds include units-in-training providing own OPFOR and joint training with USAF using F-15/16. Other shortfalls: Threat Level 3 and 4 EC signature equipment, and limited coverage of EW threat systems and OPFOR simulators beyond R-2301W. The RM/T program is addressing shortfalls consistent with available resources.
	Unit Level Training		Same as above.
	MEU Level Training		Same as above.
Scoring & Feedback System	Individual Level Training		TACTS and EC&C coverage is limited to R-2301W. S-A threat simulations are limited. Tactical targets are not scored and there is no scoring feedback in R-2507. Debrief capability is limited to MCAS Yuma, MCAS Miramar, and NAF El Centro. Low altitude communication is limited. EC&C is limited to R-2301W. There are no secure EC&C circuits. Range Modernization / Transformation program is addressing shortfalls consistent with available resources; initiatives include: invest in JNTC compliant tracking and EC&C equipment to cover entire range complex; provide staffing support for Range Operational Control Center (ROCC); upgrade S-A simulations; provide scoring for tactical targets in R-2507N/S; upgrade TACTS to TCTS; and communications upgrade to resolve low altitude shortfall and shortage of secure communication circuits.
	Unit Level Training		Same as above.
	MEU Level Training		Same as above.
MOUT Facilities	Individual Level Training		Development of new MOUT facilities has received focused attention throughout the Marine Corps, resulting in significant improvements; however deficiencies remain. The RM/T program is continuing to address shortfalls consistent with available resources and Service priorities.
	Unit Level Training		Same as above.
	MEU Level Training		Same as above.

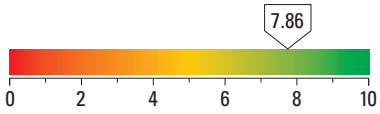
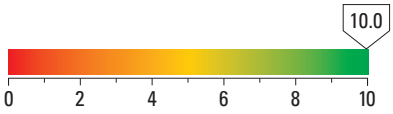
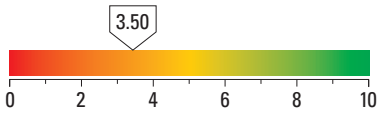
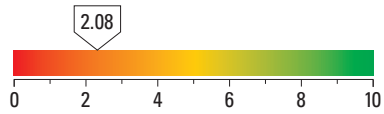
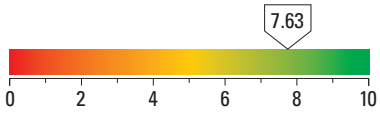
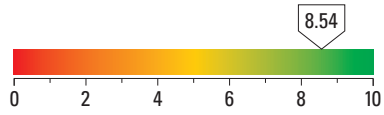
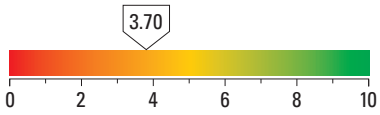
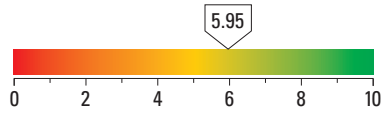
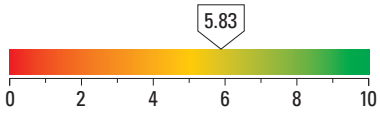
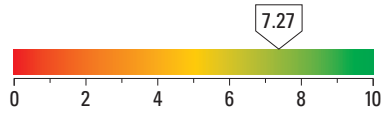
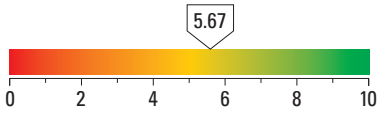
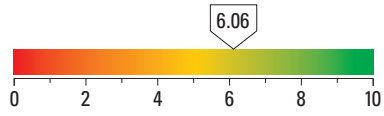
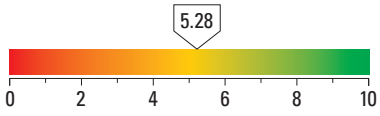
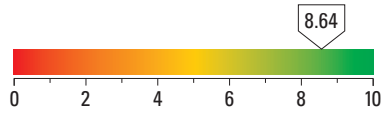
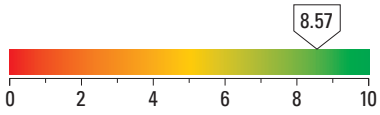
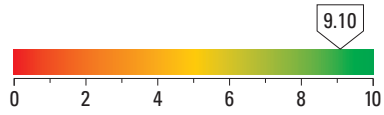
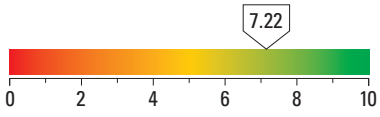
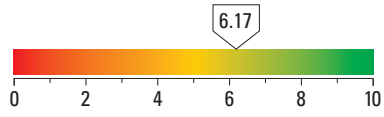
Figure 2-18 Marine Corps Capability and Encroachment Assessment Detail (continued)

MCAS Yuma/Bob Stump Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Individual Level Training	🟡	Endangered species and habitat protection requirements result in significant challenges to effective training involving earthwork or heavy equipment operations. Range delays are encountered for some training activities involving high explosive ordnance due to requirement to physically inspect the ranges to ensure that no endangered wildlife species are occupying the area. MCAS Yuma maintains close coordination with USFWS to address ESA-based constraints on training.
	Unit Level Training	🔴	Same as above. Impacts are more significant for unit- and MEU-level training.
	MEU Level Training	🔴	Same as above. Impacts are more significant for unit- and MEU-level training.
Munitions Restrictions	Individual Level Training	🟡	Due to UXO presence, convoy security elements are not authorized to depart existing roads or trails which limits the realism of required training. Range clearance procedures mitigate impacts.
	Unit Level Training	🟡	Same as above.
	MEU Level Training	🟡	Same as above.
Spectrum	Individual Level Training	🔴	MCAS Yuma is a joint military-civilian use airfield; significant civilian aircraft operations often crowd tower and approach frequencies. Civilian and military frequencies are separate; however, ATC's response is often delayed to military aircraft due to communications with civilian traffic. Growth in regional communications infrastructure, including south of the border with Mexico, and new commercial cell phone towers increase noise floor levels and some of the systems operate in the same frequency bands as the equipment used by MCAS Yuma or tenant units. The ability to use the full spectrum of L-Band (D-Band) for AN/TPS-59 (V)3 radar system to include secondary radar (Identification Friend or Foe, specifically Mode-4 and Mode 5) is adversely effected. To date, Mode-4/5 cannot be used. Current impacts are manageable; however trends, including proposed broadband allocation initiatives, threaten to significantly impact training and daily airfield operations.
	Unit Level Training	🔴	Same as above.
	MEU Level Training	🔴	Same as above.
Airspace	Individual Level Training	🟡	When FAA (LA Center) experiences significant enroute weather issues, commercial air traffic sometimes is re-routed around (or through MCAS controlled restricted airspace). Typically, through Letter of Agreement (LOA) the use of MCAS airspace is granted by MCAS if not being utilized by scheduled military training, but emergent cases have led to LA Center assuming the airspace, affecting military training. (CLUS App. D. Part II. 1 and 3). Aircraft (a/c) ordnance takeoffs and recoveries are restricted to certain runways. As a shared use airfield, significant civilian a/c ops often delay military a/c takeoffs and require military a/c to extend traffic pattern for proper spacing to land. Crop dusters operating within the tower's airspace are mitigated by flying normal course rules into and out of airfield for helos and are distracting. Power lines planned around base underlying Class D airspace impact instrument approach procedures.
	Unit Level Training	🟡	Same as above.
	MEU Level Training	🟡	Same as above.
Noise Restrictions	Individual Level Training	🟡	Supersonic flight restricted to a corridor located in the R2301W and is restricted to only one direction inhibiting realistic training. Noise complaints stem from aircraft aligning to use targets in restricted areas that may be close to the borders of the area (R2301W/BMGR). Residential expansion towards the boundary of the range areas contribute to this. Low-level aircraft (helos) transiting to and from these areas have resulted in noise complaint issues as housing grows in the Foothills area. (JLUS App. D. Part II. 1 and 3). MCAS Yuma's community liaison and outreach program seeks to influence community understanding of training and operational concerns.
	Unit Level Training	🟡	Same as above.
	MEU Level Training	🟡	Same as above.
Adjacent Land Use	Individual Level Training	🟡	The population of the region of MCAS Yuma (Yuma County, AZ) increased 20% between 2000–2008 (U.S. Census Bureau). This trend is expected to continue, increasing urbanization in the vicinity of the Air Station and Yuma ranges, raising concerns about encroachment. Communications and electrical transmission infrastructure threatens to interfere with flight patterns and military use of critical bands of the frequency spectrum. Light sources associated with urban growth around the airfield currently are impacting aircrews' ability to train with Night Vision Devices (NVD's). Noise concerns have resulted in alteration of flight corridors to mitigate community impacts. MCAS Yuma's community liaison and outreach program seeks to influence community understanding of training and operational concerns.
	Unit Level Training	🟡	Same as above.
	MEU Level Training	🟡	Same as above.

Table 2-6 Marine Corps Capability and Encroachment Assessment Comparison

Range Name	Capability Score	Encroachment Score
MCAS Beaufort/ Townsend		
MCMWTC Bridgeport		
MCIPAC-MCB Butler		
MCAS Cherry Point		
MCBH		
MCB Camp Lejeune		
MCB Camp Pendleton		
MCB Quantico		
MCAGCC Twentynine Palms		
MCAS Yuma/Bob Stump		

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2.2.3 NAVY RANGE ASSESSMENTS

Table 2-7 Navy Capability Assessment Data Summary

Range	NMC	PMC	FMC	Capability Scores
Atlantic City	0	1	6	9.29
Atlantic Test Range – Patuxent River	0	17	24	7.93
AUTEC	0	1	34	9.86
Boston	0	2	12	9.29
China Lake	0	1	23	9.79
El Centro	0	10	8	7.22
Fallon	2	15	9	6.35
Gulf of Mexico	0	4	25	9.31
Hawaii	0	31	28	7.37
Jacksonville	1	17	24	7.74
Japan	10	18	16	5.68
Key West	0	3	4	7.86
Mariana Islands	21	22	16	4.58
Narragansett	0	3	4	7.86
Navy Cherry Point	1	23	31	7.73
Northern California (NOCAL)	3	6	29	8.42
Northwest Training Range Complex	4	20	28	7.31
Okinawa	8	32	10	5.20
Point Mugu Sea Range	0	7	51	9.40
Southern California (SOCAL)	2	31	35	7.43
Virginia Capes (VACAPES)	1	26	34	7.70
HQ Navy	**53**	**290**	**451**	**7.51**

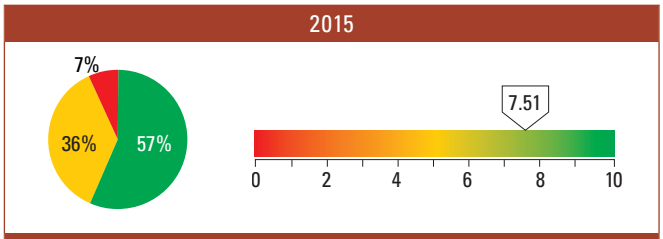
Table 2-8 Navy Encroachment Assessment Data Summary

Range	Severe	Moderate	Minimal	Encroachment Scores
Atlantic City	0	2	4	8.33
Atlantic Test Range – Patuxent River	0	18	40	8.45
AUTEC	0	9	18	8.33
Boston	0	4	6	8.00
China Lake	0	18	26	7.95
El Centro	2	3	6	6.82
Fallon	12	7	28	6.70
Gulf of Mexico	0	7	18	8.60
Hawaii	1	21	40	8.15
Jacksonville	0	18	22	7.75
Japan	2	7	20	8.10
Key West	0	2	4	8.33
Mariana Islands	1	29	33	7.54
Narragansett	0	2	3	8.00
Navy Cherry Point	0	13	25	8.29
Northern California (NOCAL)	0	2	29	9.68
Northwest Training Range Complex	4	12	36	8.08
Okinawa	2	14	33	8.16
Point Mugu Sea Range	3	21	5	5.34
Southern California (SOCAL)	1	50	32	6.87
Virginia Capes (VACAPES)	0	27	18	7.00
HQ Navy	**28**	**286**	**446**	**7.75**

There are 21 Navy Range Complexes identified in the 2015 SRR inventory in Appendix A assessed in this chapter of the SRR. Guantanamo and Diego Garcia Range Complexes were previously reported in the inventory but the decision was made to not include them this year based on the Navy's near-term fleet training patterns, which no longer include either geographic location, as well as a lack of permanent training range infrastructure supporting these complexes. The limited utilization and capability of the range space associated with these complexes is in no way related to the role of their associated installations for supporting naval operations. As a part of ongoing reviews, the Navy will re-evaluate potential reinstitution of capability and encroachment assessments for both range complexes.

Beginning in 2015, the Navy added one additional mission area – Expeditionary Warfare. This is defined as operations conducted by maritime forces in the littoral, riparian, or coastal environment.

Figure 2-19 **Navy** Capability Chart and Scores



Summary Observations

Navy's overall capability score increased from 7.47 in 2012 to 7.51 in 2015

- Navy's Fully Mission Capable (FMC) assessments (green) remained unchanged as 57%
- Partially Mission Capable (PMC) assessments (yellow) increased from 34% to 36%
- Not Mission Capable (NMC) assessments (red) decreased from 8% to 7%

Historical Information, Results, and Future Projections

Calendar Year	2008	2009	2010	2011	2012
Capability Scores	7.37	7.28	7.37	7.35	7.47

The top three Capability Attributes with maximum number of red and yellow assessments are (Figure 2-23):

- Range Support (1+75)
- Threats (10+48)
- Scoring and Feedback Systems (18+44)

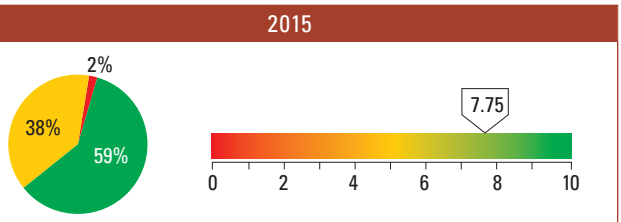
The top three Mission Areas with maximum number of red and yellow assessment are (Figure 2-25):

- Strike Warfare (14+56)
- Anti-Air Warfare (8+50)
- Electronic Combat (14+29)

Training to threat representative scenarios with ground truth recording and instructor feedback supports a quality of readiness training that ultimately improves the survivability of our forces. Degraded range capabilities cause operators to adapt and innovate to maintain proficiency. This often causes readiness to remain high despite degradations at one specific location. While these training adaptations are unlikely to erode overall unit readiness in the short-term, the slow erosion of capability across a system of ranges will degrade readiness as alternative training solutions do not meet the necessary quality levels. For the period of this report, the top three capability limitations are: Mariana Islands training range infrastructure, Southern California (SOCAL) for targets in Naval Special Warfare (NSW) and land-space for Amphibious Warfare (AMW), and scoring and feedback for ASW at Virginia Capes (VACAPES), Jacksonville, and Navy Cherry Point. These specific range equities compete for the same limited resources which ultimately erodes the quality of training support provided to the fleet.

Refer to the Navy's 21 individual range assessments for comments and additional information (Figure 2-27)

Figure 2-20 **Navy** Encroachment Chart and Scores



Summary Observations

Navy's overall encroachment score decreased from 8.13 in 2012 to 7.75 in 2015

- Navy's minimal risk assessments (green) decreased from 64% to 59%
- Moderate risk assessment (yellow) increased from 34% to 38%
- Severe risk assessments (red) remained unchanged as 2%

Historical Information, Results, and Future Projections

Calendar Year	2008	2009	2010	2011	2012
Encroachment Scores	9.08	8.49	8.41	8.23	8.13

The three Encroachment Factors with maximum number of red and yellow assessment are (Figure 2-24):

- Spectrum (9+62)
- Maritime Sustainability (1+50)
- Range Transients (0+46)

The top three Mission Areas with maximum number of red and yellow assessments are (Figure 2-26):

- Strike Warfare (7+50)
- Anti-surface Warfare (0+44)
- Anti-air Warfare (7+35)

Encroachment has remained relatively constant for the period of this report and as assessed in the 2012 SRR. The Navy update in this report emphasizes the potential impact from energy development, frequency spectrum competition, and maritime sustainability issues as well as including discussions of airspace and adjacent land use, and cultural resources. Restrictions resulting from electromagnetic spectrum encroachment include prohibitions from performing GPS jamming, authorization to radiate VHF early warning threat radar system, and restricted use of the Track While Scan Simulator. Maritime protective and mitigation measures undertaken in compliance with regulatory requirements have resulted in training restrictions that reduce training flexibility, force segmented training, and ultimately reduce training realism. A preponderance of potential archaeological sites identified on San Clemente Island (SCI) that lack definitive eligibility determination has decremented SOCAL's Cultural Resources encroachment assessment from minimal to severe.

Refer to the Navy's 21 individual range assessments for comments and additional information (Figure 2-27)

Figure 2-21 Navy Capability Assessments by Range

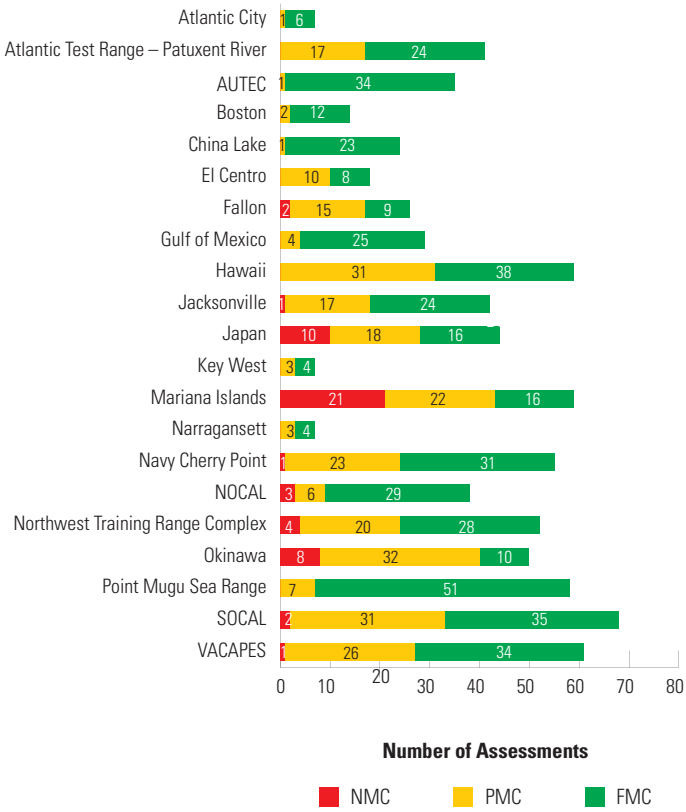


Figure 2-22 Navy Encroachment Assessments by Range

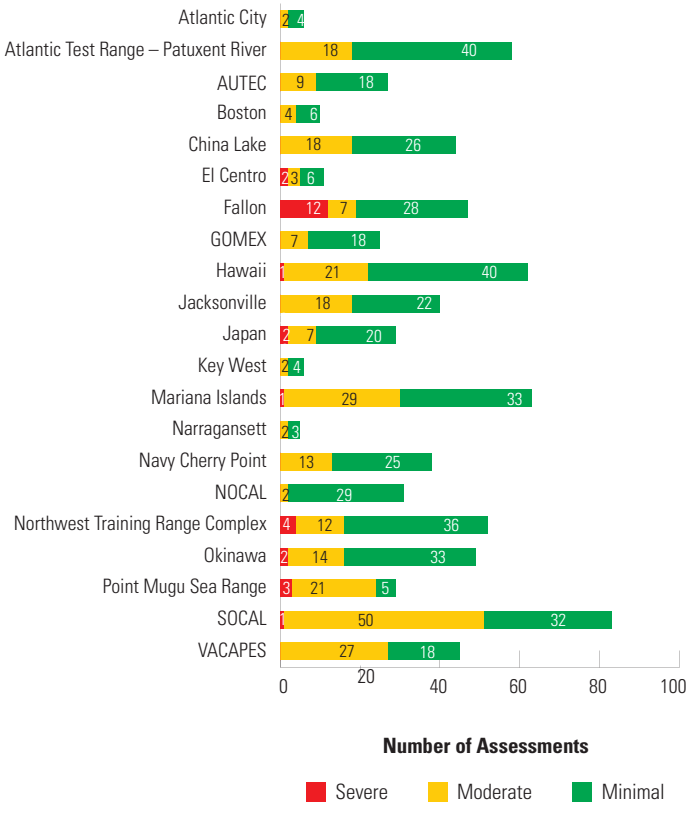


Figure 2-23 Navy Capability Assessment by Attributes

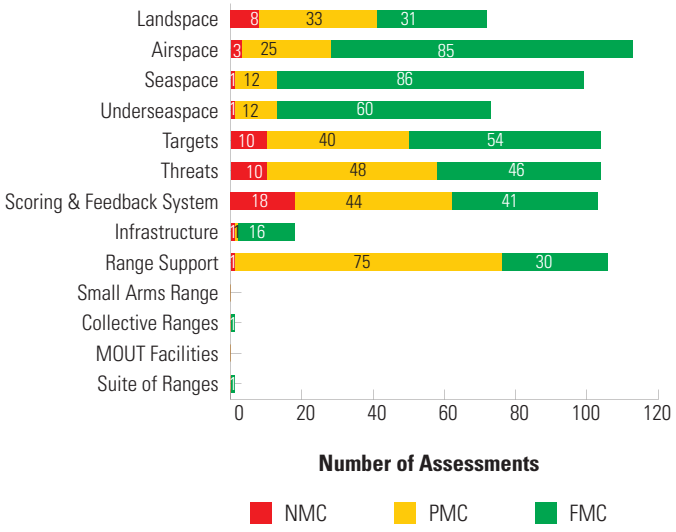


Figure 2-24 Navy Encroachment Assessment by Factors

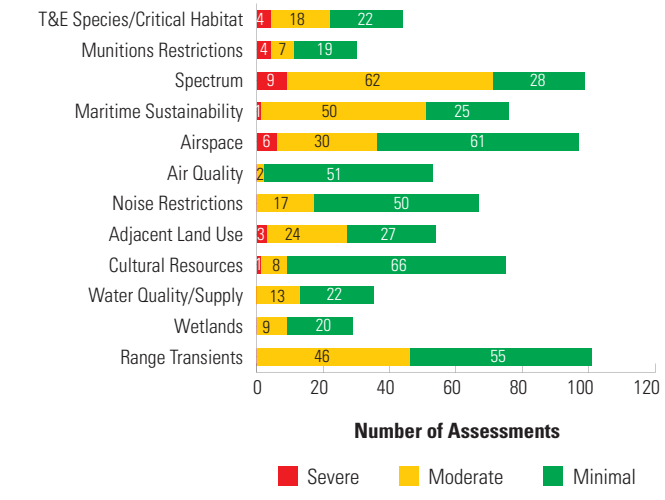


Figure 2-25 Navy Capability Assessment by Mission Areas

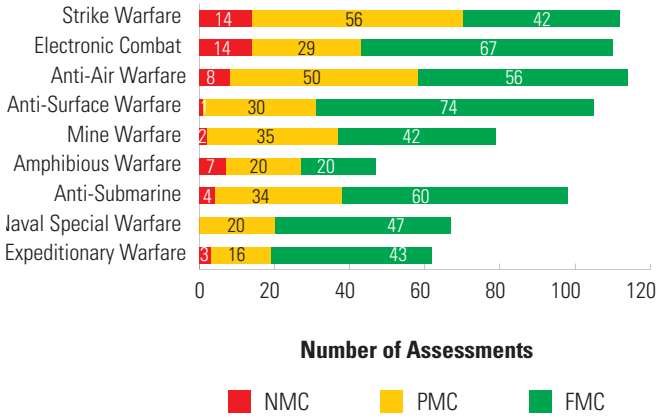


Figure 2-26 Navy Encroachment Assessment by Mission Areas

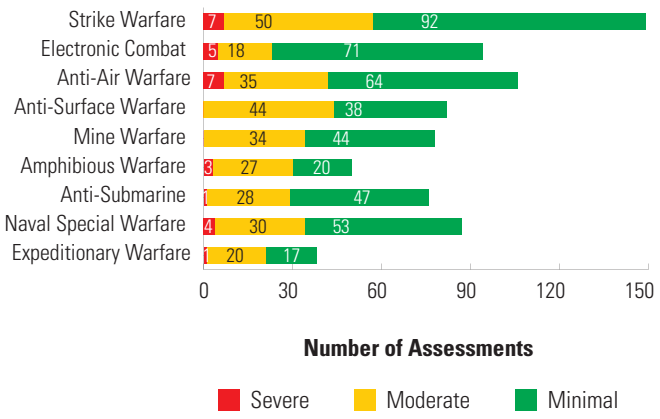


Figure 2-27 Navy Capability and Encroachment Assessment Detail

Atlantic City Assessment Details

Range Mission Description

The Atlantic City Range Complex supports antisurface warfare (ASUW) training. The complex is located in the waters adjacent to the coasts of New Jersey and New York. The area is controlled by the Fleet Area Control and Surveillance Facility Virginia Capes, (FACSFAC VACAPES). The complex is composed of surface, subsurface and special use airspace operating areas. Note: Encroachment Action Plan coverage for this complex is included in the VACAPES/Northeast/Chesapeake Bay Offshore EAP scheduled for completion in Spring 2015.

Capability Data

Mission Areas	Capability Attributes												
	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
Strike Warfare													
Electronic Combat													
Anti-Air Warfare													
Anti-Surface Warfare		●	●	●	●	●	●		●				
Mine Warfare													
Amphibious Warfare													
Anti-Submarine													
Naval Special Warfare													
Expeditionary Warfare													

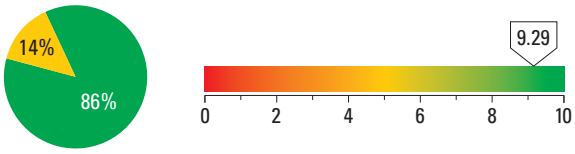
Legend: FMC ● PMC ● NMC ●

Encroachment Data

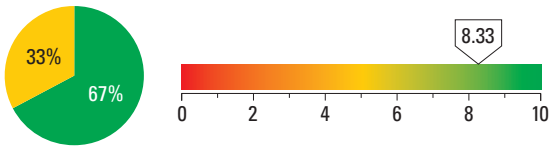
Mission Areas	Encroachment Factors												
	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Strike Warfare												
Electronic Combat												
Anti-Air Warfare												
Anti-Surface Warfare			●	●	●		●		●			●
Mine Warfare												
Amphibious Warfare												
Anti-Submarine												
Naval Special Warfare												
Expeditionary Warfare												

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

The capability attribute most impacting range mission performance is Range Support. The mission area most severely impacted is ASUW. There is no projected status change.

Summary Observations

Spectrum and Maritime Sustainability are the encroachment factors that most impact the range's ability to perform its assigned mission. ASUW is the assigned mission area most impacted.

Atlantic City Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	8.93	8.93	8.93	8.93	9.29	**Encroachment Scores**	8.75	8.33	8.33	8.33	8.33
The capability assessment has been stable from year to year, with relatively constant overall scores for CY2010 and 2011. In 2012, the AAW mission area was deleted by USFF.						Encroachment assessments for CY2008 were different than for CY2009–2012. The algorithm for the overall assessment score for 2009–2012 was revised from the original algorithm used in 2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009–2012 provide a more accurate assessment of encroachment. The assessments for the latter years reveal there has been little encroachment change from year to year, with relatively constant overall scores through to 2012. The VACAPES-Northeast RCMP update is complete. Department of Interior (DOI) and private energy interests in the Outer Continental Shelf (OCS) are increasing as domestic energy demand builds. Naval offshore operating areas and training events may be affected. High priority areas include training ranges and seaspace in and adjacent to all Navy OPAREAs. The Navy and OSD continue to work closely with the Fleets and DOI's Bureau of Ocean Energy Management (BOEM) to resolve issues of combined use of the OCS important to both agencies. Fleet review and analysis of impacts from both oil/gas and wind energy "lease sale" areas (Mission Critical Areas-MCAs) have been reviewed and forwarded to OSD. DoD and DOI coordination continues. Atlantic City had no emerging encroachment issues in 2014 that affect Atlantic City operations. The 2012 Atlantic City encroachment assessment removed AAW as a Mission Area per USFF direction. All other 2014 assessment data remain the same as 2012. The Northeast Encroachment Action Plan, including Atlantic City, is currently underway.					

Atlantic City Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Range Support	Anti-Surface Warfare (ASUW)		A lack of a web-based scheduling system with pre-event, real-time, and post-event modules precludes most efficient scheduling and documenting of range usage. Post-event reporting is particularly critical for ordnance expenditures or active sonar usage in at-sea OPAREAs since the MMPA permits require Navy to periodically report these values. Non-compliance or inaccurately reporting post-event values to regulators risks range access or prohibitions on training events that involve active sonar or high explosives at-sea. OPNAV N98 has determined that the Data Collection and Scheduling Tool (DCAST) system will be the Special Use Airspace (SUA) scheduling tool for all Fleet Area Control and Surveillance Facilities (FACSFACs) and all other Air Traffic Control facilities with SUA reporting requirements. DCAST system programmers are conducting site visits to the FACSFACs to gather operating area and airspace data to develop DCAST for each location.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Spectrum	Anti-Surface Warfare (ASUW)		Employment of Link 16, SPY-1 radar, SPS 49 radar, and Identification Friend or Foe (IFF) are restricted. Restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief and to develop encroachment strategies that will reduce encroachment while ensuring pending use of emerging spectrum technologies. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Atlantic City Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Maritime Sustainability	Anti-Surface Warfare (ASUW)	●	Maritime protective and mitigation measures undertaken in compliance with regulatory requirements have resulted in training restrictions that reduce training flexibility and ultimately reduce training realism. All at-sea training is impacted to some degree; impacts are most significant to integrated warfare training using active underwater acoustic sources. The Navy and National Marine Fisheries Service (NMFS) have developed science based protective and mitigation measures that adequately protect marine species while accommodating military readiness activities. The Navy continues to develop Environmental Impact Statements and obtain permits and authorizations for its range complexes to ensure military training complies with applicable laws and regulations. Litigation risks remain a concern, entailing the potential to delay or further restrict training, despite the protective and mitigation measures applied by the Navy in compliance with the MMPA and the ESA. Endangered species/critical habitat encroachment from the North Atlantic right whale has created avoidance areas that have resulted in some reduction of training days and prohibits certain training events. This area is relatively small in scope, however, if these types of restrictions were applied to other species/areas, there would be significant impacts to readiness through reduction in range access, segmentation of training/reduction in realism, limits on the application of new technologies, raised flight altitudes, reduced live fire proficiency, increased personnel tempo, and increased O&M costs. The Navy will continue to invest in marine mammal research; rely on scientifically valid empirical data results as basis of marine mammal mitigation development; factor mitigation effectiveness into permit requests and continue education of Fleet units to adhere to the maritime protective and mitigation measures and public education outreach efforts. Navy's authorizations under the MMPA and ESA include an adaptive management approach that includes continually evaluating existing mitigation measures for their potential impacts on training. If impacts on training from mitigation measures are identified and documented, Navy will raise these impacts with NMFS for resolution during an annual adaptive management review process.

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Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Atlantic Test Range – Patuxent River Assessment Details

Range Mission Description

The Atlantic Test Ranges (ATR) is the Navy's principal RDT&E, engineering, and Fleet support center for manned and unmanned aircraft, engines, avionics, aircraft support systems, and ship/shore/air operations. Various Fleet squadrons, primarily from the East Coast, come to ATR to train when airspace or test assets are available.

Capability Data

Mission Areas	Capability Attributes												
	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
Strike Warfare	●	●	●		●	●	●	●	●				
Electronic Combat	●	●	●		●	●	●	●	●				
Anti-Air Warfare	●	●	●		●	●	●	●	●				
Anti-Surface Warfare													
Mine Warfare		●	●	●	●	●	●	●	●				
Amphibious Warfare													
Anti-Submarine													
Naval Special Warfare	●	●	●	●	●	●	●	●	●				
Expeditionary Warfare													

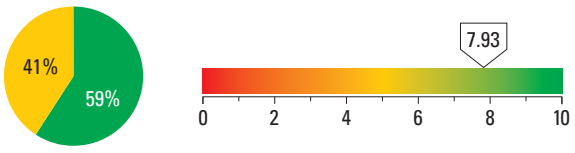
Legend: FMC ● PMC ● NMC ●

Encroachment Data

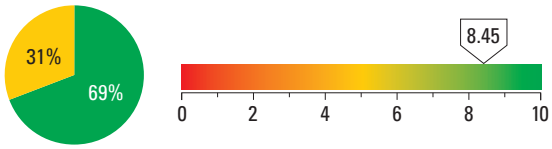
Mission Areas	Encroachment Factors											
	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Strike Warfare	●	●	●	●	●	●	●	●	●	●	●	●
Electronic Combat	●	●		●	●	●	●	●	●	●	●	●
Anti-Air Warfare	●	●		●	●	●	●	●	●	●	●	●
Anti-Surface Warfare												
Mine Warfare	●	●	●	●	●	●	●	●	●	●	●	●
Amphibious Warfare												
Anti-Submarine												
Naval Special Warfare	●	●	●	●	●	●	●	●	●	●	●	●
Expeditionary Warfare												

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

Airspace is the capability attribute that most impacts the range's ability to perform its assigned mission. Strike warfare and mine warfare are the mission areas that are impacted the most. No change in capability is anticipated for the future.

Note on NSW Assessments: Assessments of Navy Special Warfare (NSW) training are based on actual NSW demand and use of training range capability and space. Actual Training range capability and space requirements are based on Fleet Readiness Training Plan demands for conventional warfare areas.

Summary Observations

Spectrum, Airspace, Noise Restrictions, and Adjacent Land Use are the encroachment factors that impact the range's ability to perform its assigned mission. STW, EC, AAW, MW, and NSW are the mission areas that are impacted the most. Increased population growth will lead to additional encroachment pressures. Increased desire for additional spectrum for commercial use will lead to additional encroachment pressures. The encroachment impacts will only improve with continued national attention to increase spectrum for military use and more efficient use of the available spectrum.

Note on NSW Assessments: Assessments of Navy Special Warfare (NSW) training are based on actual NSW demand and use of training range capability and space. Actual training range capability and space requirements are based on Fleet Readiness Training Plan demands for conventional warfare areas.

Atlantic Test Range – Patuxent River Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	7.17	7.93	7.93	7.93	7.93	**Encroachment Scores**	8.33	8.33	8.33	8.33	8.33
Capability at the Atlantic Test Range has remained steady since 2008. It is anticipated capability will remain steady in the future.						Encroachment pressures have remained constant at the Atlantic Test Range since 2008. It is anticipated that they will remain stable in the future.					

Atlantic Test Range – Patuxent River Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strike Warfare (STW)	●	The Pax River Complex provides the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements. The range is no longer able to use Bloodsworth Island for impact operations. The range offers land-based targets but are limited to no-drop training, limiting realistic training. No planned actions to remedy. The range will continue to provide the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements.
	Electronic Combat (EC)	●	The Pax River Complex provides the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements. This limits realistic training. No actions to remedy planned. The range will continue to provide the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements.
	Naval Special Warfare (NSW)	●	Same as above.
Airspace	Strike Warfare (STW)	●	The Pax River Complex and the associated Special Use Airspace (SUA) provides the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements. This limits realistic training. No actions planned at this time. The range will continue to provide the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Mine Warfare (MW)	●	The Pax River Complex and the associated SUA provides the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements. Aerial Mining exercises (F/A-18, P-3, and B-52) have been supported and mine shapes have been provided to support mine detection events. This results in limited realistic training. No planned remedial actions. The range will continue to provide the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements.
Seaspace	Strike Warfare (STW)	●	The Pax River Complex provides the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements. Sea-based targets are available but are limited to no-drop and/or limited "blue bomb" training operations. This results in limited realistic training. Currently no remedial actions planned. The range will continue to provide the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements.
	Electronic Combat (EC)	●	The Pax River Complex provides the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements. The Chesapeake Bay OPAREAS limit the size of operations. This results in limited realistic training. No remedial actions planned. The range will continue to provide the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements.
	Mine Warfare (MW)	●	The Pax River Complex and the associated SUA provides the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements. Aerial Mining exercises (F/A-18, P-3, and B-52) have been supported and mine shapes have been provided to support mine detection events. The Chesapeake Bay also has water depth limitations. This results in limited realistic training. No remedial actions planned. The range will continue to provide the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Atlantic Test Range – Patuxent River Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Undersea Space	Mine Warfare (MW)	●	The Pax River Complex, associated SUA, and surface danger zone provides the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements. Mine shapes have been provided to support mine detection events. The Chesapeake Bay also has water depth limitations. This results in limited realistic training. No remedial actions planned. The range will continue to provide the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements.
	Naval Special Warfare (NSW)	●	The Pax River Complex and the associated SUA provides the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements. Aerial Mining exercises (F/A-18, P-3, and B-52) have been supported and mine shapes have been provided to support mine detection events. The Chesapeake Bay also has water depth limitations. This results in limited realistic training. No remedial actions planned. The range will continue to provide the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements.
Targets	Strike Warfare (STW)	●	The Pax River Complex provides the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements. Sea-based targets are available but are limited to no-drop and/or limited "blue bomb" training operations. This results in limited realistic training. Currently no remedial actions planned. The range will continue to provide the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements.
	Mine Warfare (MW)	●	The Pax River Complex and the associated SUA provides the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements. Aerial Mining exercises (F/A-18, P-3, and B-52) have been supported and mine shapes have been provided to support mine detection events. The Chesapeake Bay also has water depth limitations. This results in limited realistic training. No remedial actions planned. The range will continue to provide the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements.
Threats	Strike Warfare (STW)	●	The Pax River Complex provides the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements. The range primarily offers electronic threat emitters. This results in limited realistic training. No remedial actions planned. The range will continue to provide the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements.
	Mine Warfare (MW)	●	The Pax River Complex and the associated SUA provides the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements. Aerial Mining exercises (F/A-18, P-3, and B-52) have been supported and mine shapes have been provided to support mine detection events. The Chesapeake Bay also has water depth limitations. This results in limited realistic training. No remedial actions planned. The range will continue to provide the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements.
	Naval Special Warfare (NSW)	●	The Pax River Complex provides the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements. This limits realistic training. No actions to remedy planned. The range will continue to provide the resources and capabilities to support a subset (typically limited to unit (basic) and intermediate level or phases of training) of the total Navy mission warfare requirements.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Spectrum	Strike Warfare (STW)	●	Reduction of available spectrum coupled with the increase in spectrum requirements limits the range's ability to schedule certain types of events and many concurrent activities. Planned actions to remedy include working through the Range Commanders Council (RCC) to address spectrum requirements at the national level and continue to press for the increased availability of spectrum for use by both the community and Navy.
	Mine Warfare (MW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.

Atlantic Test Range – Patuxent River Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Airspace	Strike Warfare (STW)	●	Pressure from the Federal Aviation Administration (FAA) to route civil air traffic into operational areas threatens to impact flight operations during normal periods. Private and commercial flights increase the volume of traffic and spill in to the Special Use Airspace (SUA). This reduces the availability of restricted SUA and traffic spills into the SUA can limit/change flight operations. The range plans continued coordination with airport planning agencies and FAA to mitigate impacts.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.
Noise Restrictions	Strike Warfare (STW)	●	The operational noise impacts communities. Noise complaints from routine aircraft operations and occasional sonic booms are generated around both airfields, although, primarily are linked to operations at NAS Patuxent River. NAS Patuxent River is currently modifying operations to reduce noise. Increased noise complaints could compromise operations through pressure to modify or discontinue specific ops. Range plans to continue to respond to community concerns via the noise hotline, mitigate sonic boom impacts via the sonic boom monitors and sonic boom prediction tool model, issue press releases for noisy operations, conduct awareness regarding noise issues to squadrons, and convey to the importance of the Navy's mission to the public.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.
Adjacent Land Use	Strike Warfare (STW)	●	Urban development on the Eastern Shore can result in reduced access to land based targets and surface operating areas at the Bloodsworth Island Range (BIR). Urban development in Lexington Park has the potential to impact preferred flight paths, especially in vicinity of Great Mills Road. Wind energy development on the Eastern Shore can impact low level MTRs, present false targets on airborne radar systems, and affect some EW systems. This results in modifications to some operations/flight paths. The Navy plans to continue efforts to monitor planned and proposed residential and commercial development and provide feedback to community planners and developers. The range supports adoption of local zoning ordinances and/or state laws to control heights and placement of wind turbines, and will establish High Risk of Adverse Impact Zones (HRAIZ) to inform wind energy developers of possible conflicts.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

AUTEC Assessment Details

Range Mission Description

AUTEC's mission is to provide instrumented operational capabilities in a realistic environment to satisfy research, development, test and evaluation requirements and operational assessment of warfighter readiness across the full spectrum of maritime warfare. The range's primary training support mission is Antisubmarine Warfare (ASW).

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strike Warfare													
Electronic Combat	●	●	●	●	●	●	●		●				
Anti-Air Warfare													
Anti-Surface Warfare		●	●	●	●	●	●		●				
Mine Warfare		●	●	●	●		●						
Amphibious Warfare													
Anti-Submarine		●	●	●	●	●	●		●				
Naval Special Warfare	●	●	●	●	●	●	●		●				
Expeditionary Warfare													

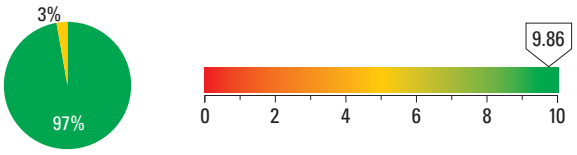
Legend: FMC ● PMC ● NMC ●

Encroachment Data

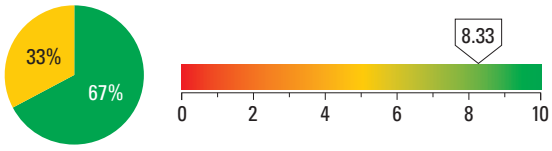
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strike Warfare												
Electronic Combat			●		●		●					●
Anti-Air Warfare												
Anti-Surface Warfare			●	●	●		●		●			●
Mine Warfare			●	●	●		●		●			●
Amphibious Warfare												
Anti-Submarine			●	●	●				●			●
Naval Special Warfare			●	●	●		●		●			●
Expeditionary Warfare												

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

The capability attribute most impacting range mission performance is Targets. The mission area most severely impacted is ASUW. There is no projected status change.

Note on NSW Assessments: Assessments of Navy Special Warfare (NSW) training are based on actual NSW demand and use of training range capability and space. Actual Training range capability and space requirements are based on Fleet Readiness Training Plan demands for conventional warfare areas.

Summary Observations

Maritime Sustainability and Range Transients are the encroachment factors that have greatest impact on AUTEC training. ASUW, MW, and ASW are the mission areas most affected by encroachment. The Navy continues to educate Fleet units to adhere to the maritime protective and mitigation measures. Continuing dialogue with the FAA may help to ameliorate the airspace restrictions. The Navy continues to improve its procedures to advise transient stakeholders of training activities.

Note on NSW Assessments: Assessments of Navy Special Warfare (NSW) training are based on actual NSW demand and use of training range capability and space. Actual training range capability and space requirements are based on Fleet Readiness Training Plan demands for conventional warfare areas.

AUTEC Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	9.86	9.86	9.86	9.86	9.86	**Encroachment Scores**	9.25	8.33	8.33	8.33	8.33
The capability assessment has been stable from year to year, with relatively constant overall scores for CY2012 and 2014.						Encroachment assessments for CY2008 were different than for CY2009 –2012. The algorithm for the overall assessment score for 2009–2012 was revised from the original algorithm used in 2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009–2012 provide a more accurate assessment of encroachment. The assessments for the latter years reveal there has been little encroachment change from year to year, with relatively constant overall scores through to 2012. AUTEC had no emerging encroachment issues during 2014 that affect AUTEC operations; the 2014 AUTEC encroachment assessment remains the same as 2012.					

AUTEC Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Targets	Anti-Surface Warfare (ASUW)	●	Training targets lack the required spectral threat signature and may not be engaged with live ordnance (Hellfire Missiles) due to net explosive weight (NEW) limits. This reduces realism; limits tactics. Recommend investing in spectral augmentation and investigating options to obtain inert Hellfire assets; no completion date identified.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Maritime Sustainability	Anti-Surface Warfare (ASUW)	●	Maritime protective and mitigation measures undertaken in compliance with regulatory requirements have resulted in training restrictions that reduce training flexibility and ultimately reduce training realism. All at-sea training is impacted to some degree; impacts are most significant to integrated warfare training using active underwater acoustic sources. The Navy and National Marine Fisheries Service (NMFS) have developed science based protective and mitigation measures that adequately protect marine species while accommodating military readiness activities. The Navy continues to develop Environmental Impact Statements and obtain permits and authorizations for its range complexes to ensure military training complies with applicable laws and regulations. Litigation risks remain a concern, entailing the potential to delay or further restrict training, despite the protective and mitigation measures applied by the Navy in compliance with the MMPA and the ESA. Endangered species/critical habitat encroachment from the North Atlantic right whale has created avoidance areas that have resulted in some reduction of training days and prohibits certain training events. This area is relatively small in scope, however, if these types of restrictions were applied to other species/areas, there would be significant impacts to readiness through reduction in range access, segmentation of training/reduction in realism, limits on the application of new technologies, raised flight altitudes, reduced live fire proficiency, increased personnel tempo, and increased O&M costs. The Navy will continue to invest in marine mammal research; rely on scientifically valid empirical data results as basis of marine mammal mitigation development; factor mitigation effectiveness into permit requests and continue education of Fleet units to adhere to the maritime protective and mitigation measures and public education outreach efforts. Navy's authorizations under the MMPA and ESA include an adaptive management approach that includes continually evaluating existing mitigation measures for their potential impacts on training. If impacts on training from mitigation measures are identified and documented, Navy will raise these impacts with NMFS for resolution during an annual adaptive management review process.
	Mine Warfare (MW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.
Airspace	Anti-Surface Warfare (ASUW)	●	Miami Center may decline Notice to Airmen (NOTAMs) and not release airspace in a timely manner over the Bahamas. Airspace restrictions segment training and/or reduce realism, reduce range access, and increase O&M costs. Operations may be delayed until the SUA is released. The Navy is continuing dialogue with the FAA to help ameliorate the airspace restrictions.
	Anti-Submarine (ASW)	●	Same as above.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

AUTEC Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Range Transients	Anti-Surface Warfare (ASUW)	●	Range transients, involving commercial shipping, commercial fishing, and private pleasure boating encroach on training, either by delaying events or forcing relocation to less than optimum locations. Commercial vessel and recreational vessel encroachment creates avoidance areas and segments training/reduces realism. The Navy will continue to pursue opportunities to inform industry and the public of the impact of range transient encroachment on At Sea OPAREAS and Navy readiness.
	Mine Warfare (MW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.

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Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Boston Assessment Details

Range Mission Description

The Boston Range Complex mission supports Antisurface Warfare (ASUW) and Antisubmarine Warfare (ASW) training. The Boston OPAREA is a surface, subsurface and special use airspace operating area offshore Maine, New Hampshire and Massachusetts. Note: Encroachment Action Plan coverage for this complex is included in the VACAPES/Northeast/Chesapeake Bay Offshore EAP scheduled for completion in Spring 2015.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strike Warfare													
Electronic Combat													
Anti-Air Warfare													
Anti-Surface Warfare		●	●	●	●	●	●		●				
Mine Warfare													
Amphibious Warfare													
Anti-Submarine		●	●	●	●	●	●		●				
Naval Special Warfare													
Expeditionary Warfare													

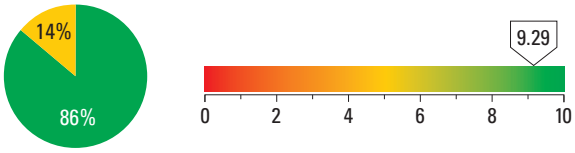
Legend: FMC ● PMC ● NMC ●

Encroachment Data

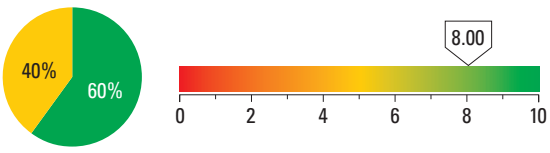
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strike Warfare												
Electronic Combat												
Anti-Air Warfare												
Anti-Surface Warfare			●	●	●				●			●
Mine Warfare												
Amphibious Warfare												
Anti-Submarine			●	●	●				●			●
Naval Special Warfare												
Expeditionary Warfare												

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

The capability attribute most impacting range mission performance is Range Support. The mission area most severely impacted is ASUW, ASW. There is no projected status change. A web-based scheduling system with pre-event, real-time, and post-event modules could enhance the interaction between ranges for better usage of range assets and availability of moveable targets and opposing force (OPFOR) systems, thereby improving the overall system of ranges.

Summary Observations

Spectrum and Maritime Sustainability are the encroachment factors having the greatest impact on training; ASUW and ASW are equally impacted. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations. The Navy continues to educate Fleet units to adhere to the maritime protective and mitigation measures.

Boston Assessment Details

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Capability Scores	8.93	9.29	9.29	9.29	9.29
The ASW threat requirement was re-evaluated after the 2008 report from Yellow to Green due to changes in training to be supported by the range.					

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Encroachment Scores	9.17	8.00	8.00	8.00	8.00
Encroachment assessments for CY2008 were different than for CY2009–2012. The algorithm for the overall assessment score for 2009–2012 was revised from the original algorithm used in 2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009 –2012 provide a more accurate assessment of encroachment. The assessments for the latter years reveal there has been little encroachment change from year to year, with relatively constant overall scores through to 2012. The VACAPES-Northeast RCMP is complete. DOI and private energy interests in the OCS are increasing as domestic energy demand builds. Naval offshore operating areas and training events may be affected. High priority areas include training ranges and sea space in and adjacent to all Navy OPAREAs. Navy and OSD work closely with the Fleets and BOEM to resolve issues of combined use of the OCS important to both agencies. Fleet review and analysis of impacts from both oil, gas and wind energy "lease sale" areas (Mission Critical Areas-MCAs) have been reviewed and forwarded to OSD. DoD and DOI coordination continues. Massachusetts and federal officials designated a 3,000 square mile area of ocean south of Cape Cod available for lease to developers of commercial scale offshore wind farms. Future wind farms may have the potential to affect military operations in the Boston training area; however, close coordination among federal and state task force representatives and DoD and Navy planners has limited any impact to maritime training thus far.					

Boston Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Range Support	Anti-Surface Warfare (ASUW)	●	A lack of a web-based scheduling system with pre-event, real-time, and post-event modules precludes most efficient scheduling and documenting of range usage. Post-event reporting is particularly critical for ordnance expenditures or active sonar usage in at-sea OPAREAs since MMPA permits require Navy to periodically report these values. Non-compliance or inaccurately reporting post-event values to regulators risks range access or prohibitions on training events that involve active sonar or high explosives at-sea. OPNAV N98 has determined that the Data Collection and Scheduling Tool (DCAST) system will be the Special Use Airspace (SUA) scheduling tool for all Fleet Area Control and Surveillance Facilities (FACSFACs) and all other Air Traffic Control facilities with SUA reporting requirements. DCAST system programmers are conducting site visits to the FACSFACs to gather operating area and airspace data to develop DCAST for each location.
	Anti-Submarine (ASW)	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Spectrum	Anti-Surface Warfare (ASUW)	●	Employment of Link 16, SPY-1 radar, SPS 49 radar, and Identification Friend or Foe (IFF) are restricted. Restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief and to develop encroachment strategies that will reduce encroachment while ensuring pending use of emerging spectrum technologies. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations.
	Anti-Submarine (ASW)	●	Same as above.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Boston Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Maritime Sustainability	Anti-Surface Warfare (ASUW)	●	Maritime protective and mitigation measures undertaken in compliance with regulatory requirements have resulted in training restrictions that reduce training flexibility and ultimately reduce training realism. All at-sea training is impacted to some degree; impacts are most significant to integrated warfare training using active underwater acoustic sources. The Navy and National Marine Fisheries Service (NMFS) have developed science based protective and mitigation measures that adequately protect marine species while accommodating military readiness activities. The Navy continues to develop Environmental Impact Statements and obtain permits and authorizations for its range complexes to ensure military training complies with applicable laws and regulations. Litigation risks remain a concern, entailing the potential to delay or further restrict training, despite the protective and mitigation measures applied by the Navy in compliance with the MMPA and the ESA. Endangered species/critical habitat encroachment from the North Atlantic right whale has created avoidance areas that have resulted in some reduction of training days and prohibits certain training events. This area is relatively small in scope, however, if these types of restrictions were applied to other species/areas, there would be significant impacts to readiness through reduction in range access, segmentation of training/reduction in realism, limits on the application of new technologies, raised flight altitudes, reduced live fire proficiency, increased personnel tempo, and increased O&M costs. The Navy will continue to invest in marine mammal research; rely on scientifically valid empirical data results as basis of marine mammal mitigation development; factor mitigation effectiveness into permit requests and continue education of Fleet units to adhere to the maritime protective and mitigation measures and public education outreach efforts. Navy's authorizations under the MMPA and ESA include an adaptive management approach that includes continually evaluating existing mitigation measures for their potential impacts on training. If impacts on training from mitigation measures are identified and documented, Navy will raise these impacts with NMFS for resolution during an annual adaptive management review process.
	Anti-Submarine (ASW)	●	Same as above.

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Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

China Lake Assessment Details

Range Mission Description

China Lake provides full-spectrum weapons and warfare systems research, development, acquisition, test and evaluation.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strike Warfare	●	●			●	●	●	●					
Electronic Combat	●	●			●	●	●	●					
Anti-Air Warfare	●	●			●	●	●	●					
Anti-Surface Warfare													
Mine Warfare													
Amphibious Warfare													
Anti-Submarine													
Naval Special Warfare	●	●			●	●	●	●					
Expeditionary Warfare													

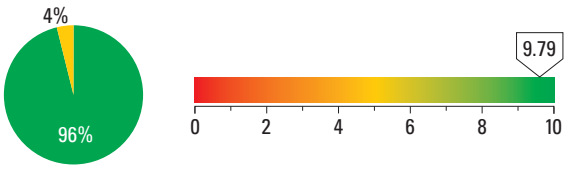
Legend: FMC ● PMC ● NMC ●

Encroachment Data

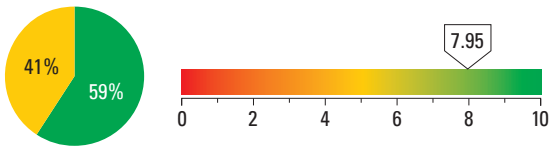
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strike Warfare	●	●	●		●	●	●	●	●	●	●	●
Electronic Combat	●	●	●		●	●	●	●	●	●	●	●
Anti-Air Warfare	●	●	●		●	●	●	●	●	●	●	●
Anti-Surface Warfare												
Mine Warfare												
Amphibious Warfare												
Anti-Submarine												
Naval Special Warfare	●	●	●		●	●	●	●	●	●	●	●
Expeditionary Warfare												

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

Infrastructure is the capability attribute that most impacts the ranges ability to perform its assigned mission. Electronic Combat is the mission area that is impacted the most; no change in capability is anticipated for the future.

Note: Assessments of Navy Special Warfare (NSW) training are based on actual NSW demand and use of training range capability and space. Actual training range capacity and space requirements are based on Fleet Readiness Training Plan (FRTP) demands for conventional warfare areas.

Summary Observations

Four test and training mission areas have moderate impacts for a combined percentage of 41%. Workarounds are available at this time; however, the trend of moderate encroachment is expected to get worse over time for Spectrum, Water Supply, and Adjacent Land Use, and workarounds for these issues may become more difficult. Spectrum is the encroachment factor that most impacts the range's ability to perform its mission. Reduction of available spectrum assets due to reallocation of range frequency bands from government to non-government/commercial usage coupled with the sky-rocketing increase in massive, complex DoD wireless data transfer/networking requirements, ensuring more electromagnetic congestion, competition and conflict. Water Supply is being affected by adjacent land use and agricultural development, which uses a relatively considerable amount of the groundwater, which is in critical overdraft. No immediate solutions exist to remedy the issue. Strike Warfare, Anti-Air Warfare, and Naval Special Warfare all share mission areas with the most moderate impacts (5 yellow). Workarounds are available at this time.

China Lake Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	9.88	9.82	9.82	9.82	9.82	**Encroachment Scores**	9.20	8.50	8.13	8.13	8.13
						Several areas within the test and training domains are subject to moderate encroachment. The moderate encroachment experienced in these areas is not currently adversely impacting the ability of the China Lake Ranges to meet test and training requirements. Currently, workarounds and/or mitigations are available. The trend of moderate encroachment is expected to get worse over time and workarounds may become more difficult. This is especially true in the areas of spectrum and energy development. Spectrum and energy development are the encroachment factors that most impact the range's ability to perform its mission at the current time. Reduction of available spectrum assets due to reallocation of military frequency bands from government to non-government/ commercial usage coupled with the increase in complex, frequency intensive DoD systems increase risk of not being able to meet test requirements. Development of wind energy threatens unique test and evaluation systems and the ability to conduct certain test operations within the range. Wind energy development in proximity to the range also degrades the ability of the Air Traffic Control and Military Radar Unit to provide advisory services which increases the risk of aircraft mishaps. The China Lake Ranges are not currently experiencing any severe impacts from encroachment. The China Lake Ranges are experiencing some moderate impacts in the test and training domains, which could get worse over time and will be monitored closely by the Range's Sustainability Office.					

China Lake Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Infrastructure	Electronic Combat (EC)	●	There is a lack of improved sites on the Electric Combat Range for threat emitters. This reduces "time to target" realism achieved with diversity and quick placement of emitters, a key element of fleet training.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Strike Warfare (STW)	●	Presence of T&E species and critical habitat at China Lake impact military activities. This requires a significant mitigation effort to support testing activities. The trend is expected to improve due to an enhanced 2013 Biological Assessment/Biological Opinion (BA/BO) with USF&WS, continued mitigations, and updating EIS/LEIS. Estimated completion in 2014.
	Anti-Air Warfare (AAW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.
Spectrum	Strike Warfare (STW)	●	Reduction of available spectrum coupled with the increase in spectrum requirements impact the mission. This limits the ability to schedule certain types of events and many concurrent activities. The solution has been coordination at the local level to deconflict when possible. The range will work through the chain of command and Range Commanders Council to address spectrum requirements at the national level.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

China Lake Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Adjacent Land Use	Strike Warfare (STW)	●	There are thousands of wind turbines in the Tehachapi-Mojave area southwest of China Lake and multiple proposals for additional wind energy facilities in the region. Wind turbines adversely affect radar systems and, as a result, testing of airborne radars cannot be conducted with systems looking towards Tehachapi-Mojave. If additional turbines are constructed in other areas, specification testing of airborne systems would be severely limited. The Navy participates in intensive engagement with land use jurisdictions (counties, BLM, etc.), wind energy developers and others to influence where wind turbines can be constructed without mission impacts. The Navy is also working on development of zoning ordinances, a High Risk of Adverse Impact Zone, and other land use policies that require wind energy development to be compatible with the military mission.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.
Cultural Resources	Strike Warfare (STW)	●	There are a vast number of archeological sites and keen interest by local Native American tribes; no National Historic Preservation Act (NHPA) Section 106 Programmatic Agreement with the State Historic Preservation Office (SHPO). This requires significant mitigation and outreach efforts, and significantly increases the planning time for test events. Planned actions to remedy the issue include performing future cultural resource surveys, consulting with SHPO, and routinely updating the Installation Cultural Resources Management Plan (ICRMP) and as needed, the Programmatic Agreement with SHPO.
	Anti-Air Warfare (AAW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.
Water Quality/ Supply	Strike Warfare (STW)	●	Supporting personnel rely on groundwater as the single source of potable water supply. This groundwater is in a condition of critical overdraft. Testing is not yet threatened, but would be severely impacted, even curtailed, if water supply diminishes in the future to the point where potable water supply is no longer available to 3000+ support staff and associated community services. Kern County, in partnership with Navy and local water district, is currently exploring options to reduce excessive water usage by agriculture, as well as obtaining imported water. A date of remediation, or feasible solutions to reduce impact, are unknown, but is not expected for at least 2 - 3 more years.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.

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Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

El Centro Assessment Details

Range Mission Description

Aircrews use the four air-to-ground ordnance delivery target areas and one parachute drop target area and associated Restricted Airspace at El Centro to develop their skills.The desert range is used for air-to-ground bombing, rocket firing, strafing, non-explosive bombing and mobile land target training while the airspace is also used for Air Combat Maneuvering, Low Altitude Tactical Training, Parachute Jump and Cargo Drop Training, and UAS flights. The ranges are a major training resource for Navy and Marine Corps aviation units. In conjunction with use of Naval Air Facility El Centro, the ranges primarily support F/A-18 and AV-8B Fleet Replacement Squadron (FRS) and Chief of Naval Air Training (CNATRA) T-45 air to ground weapons delivery training syllabus events. The ranges also are utilized by other Fleet and Marine Air Wing fixed wing and rotary wing units for training, as well as for the conduct of exercises in support of the Navy's FRTP and USMC Predeployment Training Plan (PTP). The El Centro ranges also support other U.S. and foreign/allied services on an as available basis.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strike Warfare	●	●			●		●		●				
Electronic Combat		●					●		●				
Anti-Air Warfare	●	●							●				
Anti-Surface Warfare													
Mine Warfare													
Amphibious Warfare													
Anti-Submarine													
Naval Special Warfare	●	●			●				●				
Expeditionary Warfare	●	●							●				

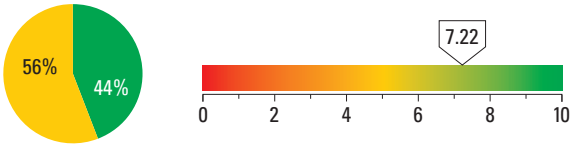
Legend: FMC ● PMC ● NMC ●

Encroachment Data

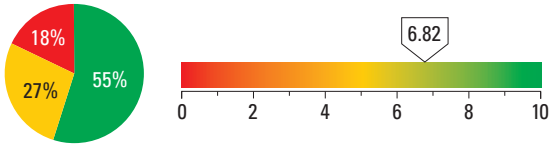
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strike Warfare	●	●	●		●	●	●	●	●	●	●	●
Electronic Combat												
Anti-Air Warfare												
Anti-Surface Warfare												
Mine Warfare												
Amphibious Warfare												
Anti-Submarine												
Naval Special Warfare												
Expeditionary Warfare												

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

The capability attribute most impacting range mission performance is Range Support. The mission area most severely impacted is Strike Warfare. Trespassers and scrappers are an exponentially increasing problem in maintaining both the functionality of targets and the availability of targets to support training requirements.

Summary Observations

Frequency Spectrum intrusions from across the border and increased U.S. government sell-off to the private sector presents the greatest encroachment challenge. Trespassers are an escalating problem that are expensive and have a significant impact on readiness training due to stolen target equipment and infrastructure. Renewable energy initiatives in and around the El Centro ranges present encroachment and range safety issues.

El Centro Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	6.39	6.39	9.00	9.00	9.00	**Encroachment Scores**	9.86	9.80	10.00	10.00	10.00
In 2008 and 2009, this range was also evaluated for AAW and Electronic Combat. In 2010, mission areas were revised for the range to support only Strike Warfare.						Encroachment assessments for CY2008 were different than for CY2009, 2010, and 2011. The algorithm for the overall assessment score for 2009–2011 was revised from the original algorithm used in 2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009, 2010, and 2011 provide a more accurate assessment of encroachment. The assessments for the latter three years reveal there has been little encroachment change from year to year, with relatively constant overall scores for CY2009, 2010, and 2011. Since 2011, the installation continues to review new development projects when notified by Imperial County to ascertain encroachment effects, if any, to operations and advise the county on favorable decision-making outcomes. Similarly, the installation CPLO continues to proactively meet with private developers and federal landowners prior to submittal of development applications, to offer advice regarding potential impacts that could be expected from their projects on military operations. The U.S. Fish and Wildlife Service, ruled on March 15, 2011 that the listing of the flat-tailed horned lizard (FTHL) as a threatened species under the ESA is not warranted. This strengthens the range-wide management strategy that aids the conservation of the species habitat. Three of the four air-to-ground target areas are contained within the FTHL management area and have potential impact on further growth of Strike Warfare activities. The potential for expansion of military activities within these areas is limited by the level of potential habitat disturbance those activities could cause. The Navy is in consultation with members of the FTHL Interagency Coordinating Committee to further define metrics for application in determining current and future military training activity habit disturbance levels. There are potential encroachment pressures (Adjacent Land Use) from alternative energy initiatives on public lands adjacent to the range areas, recreation activities in the vicinity of range boundaries, and incursion of off-road vehicles into the range areas. El Centro management is currently addressing these issues using public awareness outreach and enhanced warning and control measures.					

El Centro Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strike Warfare (STW)	●	Laser Guided Training Round (LGTR) weapons danger zone footprint modeling indicated that unconstrained release parameters have potential for off-military controlled property impact. Minor restrictions on release profile altitudes and airspeeds have been implemented with minimal impact on training fidelity. El Centro is investigating laser certification for alternate established targets that would not require release parameter restrictions. The results of survey and determination of potential for alternative target certification remain to be determined.
	Naval Special Warfare (NSW)	●	Landspace within the target areas do not support 360 degree live fire and maneuver or urban targets. NSW must compete for training time with the Marine Corps at Yuma Range complex, known as the "Yodaville Urban Target Complex (UTC)." El Centro is investigating construction of a UTC at Target 102. The results of the survey and determination of potential for target construction remain to be determined.
Airspace	Anti-Air Warfare (AAW)	●	AAW airspace over targets cannot be dual scheduled by altitude blocks resulting in competition for training space that cannot be reconciled to accommodate concurrent yet otherwise compatible training events. El Centro, Yuma and CNAP are investigating solutions allowing maximized use of training space.
	Naval Special Warfare (NSW)	●	Same as above.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

El Centro Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Targets	Strike Warfare (STW)	🟡	Target 95 lacks scoring and instrumentation feedback. There are no realistic urban Close Air Support (CAS) targets and the Mobile Land Target (MLT) is track only. The lack of feedback reduces realistic training and prohibits certain events. The MLT is underutilized due to lack of dynamic presentations. There are no definitive plans for addressing shortfalls are in progress.
	Naval Special Warfare (NSW)	🟡	Urban targets do not support 360 degree live fire and maneuver. There are no urban CAS areas. NSW must compete for training time with the Marine Corps at Yuma Range complex "Yodaville UTC." El Centro is investigating construction of an UTC at Target 102. The results of the survey and determination of potential for target construction remain to be determined.
Scoring & Feedback System	Strike Warfare (STW)	🟡	Target 95 lacks scoring and instrumentation feedback. There is no range data recorder to capture weekend range utilization. The Tactical Combat Training System (TCTS) at El Centro was removed by CNAP due to lack of use. The lack of feedback reduces realistic training and prohibits certain events for the remaining training audience. Target 95 is being evaluated to become a UAS Center of Excellence in lieu of instrumentation.
Range Support	Strike Warfare (STW)	🟡	Range equipment theft and damage at the target area by trespassers and scrappers is an exponentially growing problem. Local and federal law enforcement is unable to assign the manpower necessary to deter, and significant numbers of range equipment are located outside of existing security perimeters. Training is disrupted for trespassers or is cancelled due to equipment damage and theft; certain events become prohibited. The Navy is planning for more security infrastructure at the target areas; an ongoing effort.
	Anti-Air Warfare (AAW)	🟡	Same as above.
	Naval Special Warfare (NSW)	🟡	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Strike Warfare (STW)	🟡	Two special status reptile species, the flat-tailed horned lizard and the Colorado Desert fringe-toed lizard, inhabit the ranges. This creates avoidance areas, segmenting training and reducing realism. It also increases costs or risks. The Navy will continue to track USFWS status; no anticipated resolution date.
Spectrum	Strike Warfare (STW)	🔴	Encroachment includes commercial licensing and under 18 Ghz spectrum use in adjacent areas. There is also a lack of cross border frequency regulation. This prohibits certain training events, segments training, reduces realism, and limits use of existing and new technologies. There is no current remedy and no anticipated resolution date.
Airspace	Strike Warfare (STW)	🟡	There are horizontal and vertical limits on existing restricted airspace and FAA flight altitude cap, along with existing and increasing civilian air traffic. This creates avoidance areas and prohibits certain training events, segments training, reduces realism, and limits current and new tactics and technologies. The Navy continues to engage the FAA regarding the expansion of restricted airspace; no anticipated resolution date.
Adjacent Land Use	Strike Warfare (STW)	🔴	There is existing infrastructure that transitions into the ranges and urban development within and adjacent to the El Centro ranges. This creates avoidance areas, which segment training. Theft of range equipment prevents certain training events. The Navy liaises with local and federal agencies to mitigate renewable energy development within the El Centro ranges. The Navy is also planning for more security infrastructure at the target areas, an ongoing effort.
Range Transients	Strike Warfare (STW)	🟡	The existing infrastructure that transitions into the ranges results in an increase in trespassers from adjacent land. Avoidance areas are created, which segments training. Theft of range equipment prevents certain training events. Liaison with local and federal law enforcement. The Navy liaises with local and federal agencies to mitigate renewable energy development within the El Centro ranges. The Navy is also planning for more security infrastructure at the target areas, an ongoing effort.

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Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Fallon Assessment Details

Range Mission Description

The mission of the Fallon Range Complex is to provide Naval Air Forces with airspace and bombing ranges in support of Fleet aviation combat training. Fallon is Naval Aviation's premier training range. All carrier deployed Naval Air Forces (except Forward Deployed Naval Forces) train at the Fallon Range Complex prior to deployment. The specific mission of the Fallon Range Complex is to provide Naval Air Forces with advanced and intermediate levels of training for all over land or land based warfare. The Fallon Range Commander is Commander, Naval Strike & Air Warfare Center (NSAWC). NSAWC is responsible for all Naval Aviation training combat tactics, techniques, and procedures (TTP), for Naval Air Forces at the individual, unit, and integrated airwing levels.

Capability Data

Mission Areas	Capability Attributes												
	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
Strike Warfare	R	Y			R	Y	Y		Y				
Electronic Warfare	G	G			G	Y	Y		Y				
Anti-Air Warfare	Y	Y				Y	Y		Y				
Anti-Surface Warfare													
Mine Warfare													
Amphibious Warfare													
Anti-Submarine													
Naval Special Warfare	Y	G			G	Y	G		Y				
Expeditionary Warfare	G	G			G								

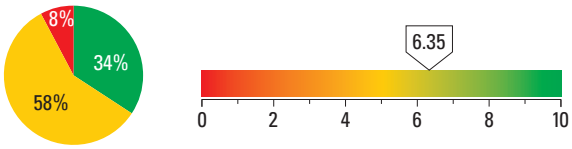
Legend: FMC (G) PMC (Y) NMC (R)

Encroachment Data

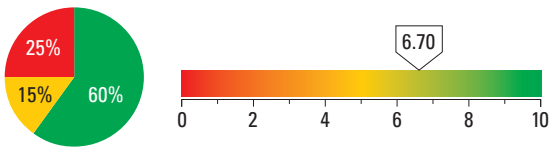
Mission Areas	Encroachment Factors											
	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Strike Warfare	G	R	R		R	G	Y	Y	G	G		Y
Electronic Combat	G	R	R		R	G	G	G		G		G
Anti-Air Warfare	G	R	R		R	G	Y	G	G	G		G
Anti-Surface Warfare												
Mine Warfare												
Amphibious Warfare												
Anti-Submarine												
Naval Special Warfare	G	R	R		R	G	G	Y	G	G		Y
Expeditionary Warfare	G				G	G	G	G	G	G		Y

Legend: Minimal (G) Moderate (Y) Severe (R)

Capability Chart and Scores



Encroachment Chart and Scores



Fallon Assessment Details

Summary Observations	Summary Observations
The capability attributes most impacting range mission performance are Targets, Airspace, Landspace. The mission areas most severely impacted are STW and AAW. Range Sustainment Support (O&M) is inadequate for EW threat coverage, the moving vehicle target, and other target programs. Note on NSW Assessments: Assessments of Navy Special Warfare (NSW) training are based on actual NSW demand and use of training range capability and space. Actual training range capability and space requirements are based on Fleet Readiness Training Plan demands for conventional warfare areas.	Spectrum is the encroachment factor having the greatest impact on training. All assigned mission areas have encroachment. The Navy has developed procedures and workarounds to accommodate spectrum encroachment. The Navy continues to discuss the various encroachment issues with the Fallon stakeholders with the expectation that the stakeholders will have clearer understanding of Navy training requirements and of strategies that can relieve training encroachment restrictions. There are Adjacent Land Use concerns, similar to NSW, for Strike Warfare due to inclusion of rotary-wing squadrons (HSM/HSC) detaching to Fallon with airwings for training. The same concerns exist for low-level flight as NSW. Note: NSW Assessments: Assessments of Navy Special Warfare (NSW) training are based on actual NSW demand and use of training range capability and space. Actual Training range capability and space requirements are based on Fleet Readiness Training Plan demands for conventional warfare areas.

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	5.65	5.65	6.09	6.09	6.96	**Encroachment Scores**	8.96	8.84	8.84	8.33	8.21
EW threats have improved from Red to Yellow. Improvement in rating from 2009 to 2010 was justified by investment in IADS and threats. The NSW landspace training requirement was re-evaluated from Red to Yellow between 2009 and 2010.						Encroachment assessments for CY2008 were different than for CY2009, 2010, and 2011. The algorithm for the overall assessment score for 2009–2011 was revised from the original algorithm used in 2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009, 2010, and 2011 provide a more accurate assessment of encroachment. The assessments for the latter three years reveal there has been little encroachment change from year to year, with relatively constant overall scores for CY2009, 2010, and 2011. The slight decrease in the CY2011 assessment results from green to yellow assessments for NSW in Munitions Restrictions, Spectrum, Airspace, and Adjacent Land Use. The 2012 assessments remain the same with the exception that there are Adjacent Land Use concerns, similar to NSW, for Strike Warfare due to inclusion of rotary-wing squadrons (HSM/HSC) detaching to Fallon with airwings for training. There is little indication encroachment pressures will change in the foreseeable future.					

Fallon Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strike Warfare (STW)	🔴	Landspace area size does not meet COCOM training requirements; limits weapons type and employment tactics; use of lasers is not allowed in all directions; and N.E.W. restricted in some areas. These restrictions reduce realism; inhibits new tactics development; and reduce live fire proficiency. There is currently planning for additional land withdrawal and a realignment and expansion of target areas.
	Anti-Air Warfare (AAW)	🟡	Flare use is restricted for flights below 2,000 ft which impacts helicopter training. This restriction reduces realism; inhibits new tactic development; and reduces live fire proficiency. There is currently planning for additional land withdrawal and a realignment and expansion of target areas.
	Naval Special Warfare (NSW)	🟡	Landspace area size does not meet requirements; limits weapons type and employment tactics; use of lasers is not allowed in all directions; and N.E.W. is restricted in some areas. No MOUT facility is available, nor is there sufficient area for ground fire and maneuver training. These restrictions reduce realism; inhibits new tactics development; and reduce live fire proficiency. Range redesign in progress to remediate small arms range areas and expand Target area B-16 and the Dixie Valley Training Area.
Airspace	Strike Warfare (STW)	🟡	Available airspace and altitude restrictions do not meet COCOM training requirements and limits tactics that may be employed. Limited supersonic employment, especially in target areas. This reduces realism; inhibits new tactics development; limits application of new weapon technologies; reduces live fire proficiency. There is currently planning for additional airspace and a realignment and expansion of SUA.
	Anti-Air Warfare (AAW)	🟡	Same as above.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Fallon Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Targets	Strike Warfare (STW)	🔴	There is a limited number of tactically significant hard targets; no IR augmentation; structural targets, and no OPNAV funding for Navy range targets program (to include containers for urban target construction and replacement). A new moving vehicle target and rail strafe system provide some moving targets and some urban targets are available in the new "Kansas" inert area. This shortfall reduces realism; inhibits new tactics development; limits application of new weapon technologies; and reduces live fire proficiency. Recommend procuring annual range target support funding, developing a sustainable source of hard targets, investing in upgraded scoring options; time sensitive target program targets; tactical targets; fixed and mobile EC sites; and urban complex. No completion date identified.
Threats	Strike Warfare (STW)	🟡	There is no live helicopter threat capability; quantity and variety of threat does not meet requirements; and EC threat above level 2 is not available. These shortfalls reduce realism; inhibit new tactics development; limit application of new weapons technologies; and reduces live fire proficiency. Recommend investing in fully mobile threat systems; simulators with Time, Space, Position Information (TSPI) integration; upgraded Integrated Air defense System; and EC threat systems through level 4. No completion date identified.
	Electronic Warfare (EW)	🟡	EC threat level does not meet requirements and quantity and variety of the threat does not meet requirements. EC threat above level 2 is not available. This reduces realism; inhibits new tactics development; limits application of new weapons technologies; and reduces live fire proficiency. Recommend investing in fully mobile threat systems; simulators with TSPI integration; upgraded Integrated Air defense System; EC threat systems through level 4. No completion date identified.
	Anti-Air Warfare (AAW)	🟡	Same as STW.
	Naval Special Warfare (NSW)	🟡	Threats not sufficient for training. This reduces realism; inhibits new tactics development; limits application of new weapons technologies; and reduces live fire proficiency. Recommend investment in sufficient threats for mission. No completion date identified.
Scoring & Feedback System	Strike Warfare (STW)	🟡	The capacity of the system does not meet requirements; is not JNTC or TENA compliant; and has no automatic RTKN. This inhibits new tactics development and reduces live fire proficiency. Recommend investing in EC systems, range EC&C architecture, JNTC and TENA compatible systems. No completion date identified.
	Electronic Warfare (EW)	🟡	Same as above.
	Anti-Air Warfare (AAW)	🟡	Same as above.
Range Support	Strike Warfare (STW)	🟡	EW threat coverage is inadequate to provide real-world representation. Existing vintage systems are extremely manpower intensive. This reduces realism; inhibits new tactics development; limits application of new weapons technologies; and reduces live fire proficiency. Full-scale armor target supplies are being exhausted, without a replacement pipeline identified.
	Electronic Warfare (EW)	🟡	Same as above. Recommend investing in fully mobile threat systems; simulators with TSPI integration; upgraded Integrated Air Defense System; and EC threat systems through level 4. No completion date identified.
	Anti-Air Warfare (AAW)	🟡	EW threat coverage is inadequate to provide real-world representation. Existing vintage systems are extremely manpower intensive. This reduces realism; inhibits new tactics development; limits application of new weapons technologies; and reduces live fire proficiency. Additional OMN support and EW emitters identified as a POM requirement.
	Naval Special Warfare (NSW)	🟡	Range provided threats are not sufficient for training. This reduces realism; inhibits new tactics development; limits application of new weapons technologies; and reduces live-fire proficiency. Recommend investment in sufficient threats for mission. No completion date identified.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Munitions Restrictions	Strike Warfare (STW)	🔴	Fallon range operations were designed (and are maintained) for aviation air-to-ground missions. All ranges have UXO potential. Introduction of ground training at Fallon ranges increases risk of a UXO incident. Impacts to training include restricted range access and areas restricted from ground use. No action planned to remedy; no known resolution.
	Electronic Combat (EC)	🔴	Same as above.
	Anti-Air Warfare (AAW)	🔴	Same as above.
	Naval Special Warfare (NSW)	🔴	Same as above.

Fallon Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Spectrum	Strike Warfare (STW)	🔴	The range maintains radar and frequency band restrictions; E-3 and EA-6B operations restrictions; EC threat emitter bandwidth restrictions; and Link-16 time slot allocations and number of aircraft restrictions which all impact FRTC training. Encroachment segments training and reduces realism, limits application of new technologies, and inhibits new tactics development. No known resolution.
	Electronic Combat (EC)	🔴	Same as above.
	Anti-Air Warfare (AAW)	🔴	Same as above.
	Naval Special Warfare (NSW)	🔴	The range maintains radar and frequency band restrictions and EC threat emitter bandwidth restrictions; all impacting NSW training. Encroachment segments training and reduces realism, limits application of new technologies, and inhibits new tactics development. No known resolution.
Airspace	Strike Warfare (STW)	🔴	Encroached by FAA altitude caps; supersonic restrictions; Visual Flight Route (VFR) corridor interruptions; run-in heading restrictions, and helicopter restrictions. This encroachment prohibits training events, segments training/ reduces realism, constrains flight altitudes, inhibits new tactics development, and complicates night/all-weather training. No known resolution.
	Electronic Combat (EC)	🔴	Same as above.
	Anti-Air Warfare (AAW)	🔴	Same as above.
	Naval Special Warfare (NSW)	🔴	Airspace is used for Fallon's primary air mission. Ground live-fire training conflicts with airspace. Ground training priority at Fallon is #13 after aviation units. Airspace encroachment on NSW ground operations prohibits training events, segments training/reduces realism, constrains flight altitudes, inhibits new tactics development, and complicates night/all-weather training. No known resolution.
Noise Restrictions	Strike Warfare (STW)	🟡	Supersonic flight prohibition below 11,000 feet above MSL impacts tactical training. These restrictions affect training realism, tactics, and night/all-weather operations; no known resolution.
	Anti-Air Warfare (AAW)	🟡	Same as above.
Adjacent Land Use	Strike Warfare (STW)	🟡	Power lines and telecommunications towers impact low altitude helicopter training and tactics. Encroachment prohibits training events, segments training/reduces realism, constrains flight altitudes, inhibits new tactics development, and complicates night/all-weather training. No known resolution.
	Naval Special Warfare (NSW)	🟡	Same as above.
Range Transients	Strike Warfare (STW)	🟡	Range management must provide range clearance for livestock. This livestock encroachment segments training/ reduces realism. No known resolution.
	Naval Special Warfare (NSW)	🟡	Same as above.
	Expeditionary Warfare (EXW)	🟡	Same as above.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Gulf of Mexico Assessment Details

Range Mission Description

The Gulf of Mexico (GOMEX) Range Complex supports training in Anti-air Warfare (AAW), Antisurface Warfare (ASUW), Mine Warfare (MW), and Naval Special Warfare (NSW).

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strike Warfare													
Electronic Combat													
Anti-Air Warfare	●	●	●		●	●	●		●				
Anti-Surface Warfare		●	●	●	●	●	●		●				
Mine Warfare		●	●	●	●	●	●		●				
Amphibious Warfare													
Anti-Submarine													
Naval Special Warfare	●	●	●	●	●	●	●		●				
Expeditionary Warfare													

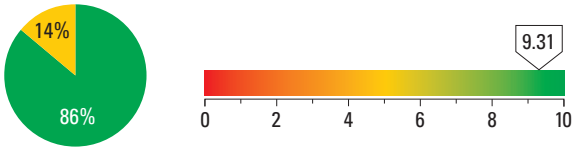
Legend: FMC ● PMC ● NMC ●

Encroachment Data

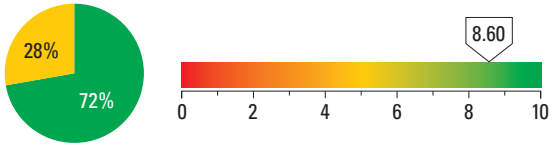
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strike Warfare												
Electronic Combat												
Anti-Air Warfare			●		●		●	●				●
Anti-Surface Warfare			●	●	●		●		●			●
Mine Warfare			●	●	●		●	●	●			●
Amphibious Warfare												
Anti-Submarine												
Naval Special Warfare			●	●	●		●	●	●			●
Expeditionary Warfare												

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

The capability attribute most impacting range mission performance is Range Support. The assigned mission areas most severely impacted are AAW, ASUW, MW and NSW. There is no immediate change to projected status. A web-based scheduling system with pre-event, real-time, and post-event modules could enhance the interaction between ranges for better usage of range assets and availability of moveable targets and OPFOR systems, thereby improving the overall system of ranges.

Note on NSW Assessments: Assessments of Navy Special Warfare (NSW) training are based on actual NSW demand and use of training range capability and space. Actual training range capability and space requirements are based on Fleet Readiness Training Plan demands for conventional warfare areas.

Summary Observations

Spectrum is the encroachment factor that has greatest impact on training, followed by Maritime Sustainability. AAW and ASUW have moderate encroachment. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations. The Navy will continue to educate Fleet units to adhere to the maritime protective and mitigation measures.

Note on NSW Assessments: Assessments of Navy Special Warfare (NSW) training are based on actual NSW demand and use of training range capability and space. Actual training range capability and space requirements are based on Fleet Readiness Training Plan demands for conventional warfare areas.

Gulf of Mexico Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	9.31	9.31	9.31	9.31	9.31	**Encroachment Scores**	9.27	8.60	8.60	8.60	8.60
Capability at GOMEX has remained steady since 2008. Principal mine warfare forces previously homeported in South Texas and supported by the range complex transitioned to Norfolk, VA (helicopters) and San Diego, CA (ships).						Encroachment assessments for CY2008 were different than for CY2009 - 2012. The algorithm for the overall assessment score for 2009–2012 was revised from the original algorithm used in 2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009 -2012 provide a more accurate assessment of encroachment. The assessments for the latter years reveal there has been little encroachment change from year to year, with relatively constant overall scores through to 2012. GOMEX Encroachment Action Plan (EAP) to be developed FY2015–16. DOI and private energy interests, to include foreign investment and acquisition in the vicinity of the OCS, are increasing as domestic energy demand builds. Naval offshore operating areas and training events may be affected. High priority areas include training ranges and seaspace in and adjacent to all Navy OPAREAs. The Navy and OSD continue to work closely with the Fleets and BOEM to resolve issues of combined use of the OCS important to both agencies. Fleet review and analysis of impacts from both oil/gas and wind energy "lease sale" areas (Mission Critical Areas-MCAs) have been reviewed and forwarded to OSD. DoD and DOI coordination continues. GOMEX had no emerging encroachment issues since 2012 that affect training operations. The 2014 encroachment assessment data remain the same as 2012.					

Gulf of Mexico Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Range Support	Anti-Air Warfare (AAW)	●	A lack of a web-based scheduling system with pre-event-real-time, and post-event modules precludes most efficient scheduling and documenting of range usage. Post-event reporting is particularly critical for ordnance expenditures or active sonar usage in at-sea OPAREAs since MMPA permits require Navy to periodically report these values. Non-compliance or inaccurately reporting post-event values to regulators risks range access or prohibitions on training events that involve active sonar or high explosives at-sea. OPNAV N98 has determined that the DCAST system will be the SUA scheduling tool for all Fleet Area Control and Surveillance Facilities (FACSFACs) and all other Air Traffic Control facilities with SUA reporting requirements. DCAST system programmers are conducting site visits to the FACSFACs to gather operating area and airspace data to develop DCAST for each location.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Spectrum	Anti-Air Warfare (AAW)	●	Employment of Link 16 is restricted. These restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief and to develop encroachment strategies that will reduce encroachment while ensuring pending use of emerging spectrum technologies. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Gulf of Mexico Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Maritime	Anti-Surface Warfare (ASUW)	●	Maritime protective and mitigation measures undertaken in compliance with regulatory requirements have resulted in training restrictions that reduce training flexibility and ultimately reduce training realism. All at-sea training is impacted to some degree; impacts are most significant to integrated warfare training using active underwater acoustic sources. The Navy and National Marine Fisheries Service (NMFS) have developed science based protective and mitigation measures that adequately protect marine species while accommodating military readiness activities. The Navy continues to develop Environmental Impact Statements and obtain permits and authorizations for its range complexes to ensure military training complies with applicable laws and regulations. Litigation risks remain a concern, entailing the potential to delay or further restrict training, despite the protective and mitigation measures applied by the Navy in compliance with the MMPA and the ESA. Endangered species/critical habitat encroachment from the North Atlantic right whale has created avoidance areas that have resulted in some reduction of training days and prohibits certain training events. This area is relatively small in scope, however, if these types of restrictions were applied to other species/areas, there would be significant impacts to readiness through reduction in range access, segmentation of training/reduction in realism, limits on the application of new technologies, raised flight altitudes, reduced live fire proficiency, increased personnel tempo, and increased O&M costs. The Navy will continue to invest in marine mammal research; rely on scientifically valid empirical data results as basis of marine mammal mitigation development; factor mitigation effectiveness into permit requests and continue education of Fleet units to adhere to the maritime protective and mitigation measures and public education outreach efforts. Navy's authorizations under the MMPA and ESA include an adaptive management approach that includes continually evaluating existing mitigation measures for their potential impacts on training. If impacts on training from mitigation measures are identified and documented, Navy will raise these impacts with NMFS for resolution during an annual adaptive management review process.
	Mine Warfare (MW)	●	Same as above.
Range Transients	Anti-Surface Warfare (ASUW)	●	Range transients, involving commercial shipping, commercial fishing, and private pleasure boating encroach on training, either by delaying events or forcing relocation to less than optimum locations. Commercial vessel and recreational vessel encroachment creates avoidance areas, segments training, and reduces realism. The Navy will continue to pursue opportunities to inform industry and the public of the impact of range transient encroachment on at-sea OPAREAS and Navy readiness.
	Mine Warfare (MW)	●	Same as above.

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Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Hawaii Assessment Details

Range Mission Description

The Hawaii Range Complex (HRC) consists of limited land area and expansive ocean operating areas and airspace in the vicinity of the Hawaiian Islands. The complex provides a training capability across all Navy warfare areas as well as the capabilities of the Pacific Missile Range Facility for testing and evaluation.

Capability Data

Mission Areas	Capability Attributes												
	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
Strike Warfare	P	P	F	F	P	P	P		P				
Electronic Combat	P	F	F	F	F	P	P		P				
Anti-Air Warfare	P	P	F		F	P	P		P				
Anti-Surface Warfare		F	F	F	P	P	P		P				
Mine Warfare		F	F	P	P	F	P		P				
Amphibious Warfare	F	P	F	F		P	F		P				
Anti-Submarine		F	F	F	F	F	P		P				
Naval Special Warfare	P	F	F	F	P	F	F		P				
Expeditionary Warfare													

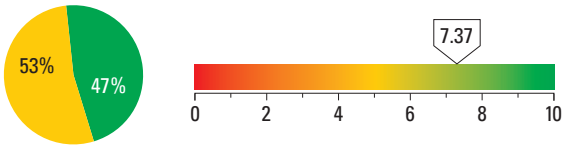
Legend: FMC (F) PMC (P) NMC

Encroachment Data

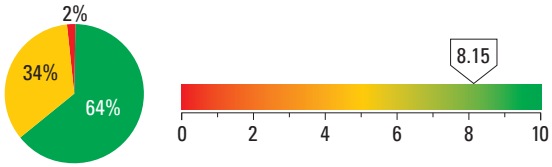
Mission Areas	Encroachment Factors											
	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Strike Warfare	P	P	P	P	P	F	F	P	P	F	F	F
Electronic Combat	F		P		F	F	F	F				F
Anti-Air Warfare			P	P	P	F	F	F				F
Anti-Surface Warfare			P	P	F				F			P
Mine Warfare			P	P	F				F			P
Amphibious Warfare	F		P	P	F		F	F	F		F	P
Anti-Submarine			F	M	F				F			P
Naval Special Warfare	F	F	F	F	F	F	F	F	F	F	F	F
Expeditionary Warfare												

Legend: Minimal (F) Moderate (P) Severe (M)

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

The capability attribute most impacting range mission performance is Range Support. The mission area most severely impacted is STW. There is no immediate change predicted.

Note on NSW Assessments: Assessments of Navy Special Warfare (NSW) training are based on actual NSW demand and use of training range capability and space. Actual Training range capability and space requirements are based on Fleet Readiness Training Plan demands for conventional warfare areas.

Summary Observations

Spectrum and Maritime Sustainability are the encroachment factors having greatest impact on training. All mission areas, except NSW, have substantial encroachment. Designation of critical habitat for the Hawaiian Monk Seal (E) under the provisions of the ESA the shorelines of the Main Hawaiian Islands, is under consideration. Large acreage in the Kokee areas, primarily state lands, are also being considered for designation of critical habitat for a host of plants and some birds and insects. Regulatory activities and alternative energy systems in marine environments will compete with training. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief. The Navy will continue to educate Fleet units to adhere to the maritime protective and mitigation measures.

Note on NSW Assessments: Assessments of Navy Special Warfare (NSW) training are based on actual NSW demand and use of training range capability and space. Actual Training range capability and space requirements are based on Fleet Readiness Training Plan demands for conventional warfare areas.

Hawaii Assessment Details

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Capability Scores	7.59	7.76	7.84	7.84	8.02

The MIW Targets and Scoring & Feedback scores have improved from Red to Green since 2008 due to range upgrades for MIW identified by COMPACFLT. In 2013, STW Scoring and Feedback was assessed as Yellow by COMPACFLT. Scoring & Feedback for ASW has gone from Green to Yellow as PMRF BARSTUR range underwater cables and hydrophones require funding and scheduling for repairs and replacement to sustain capability to support ASW training. Targets for ASW is Yellow; therefore the replacement for the MK-30 must remain on track. The Expendable Mobile Antisubmarine Training (EMATTS (MK-39)) cannot support all ASW training requirements and improvements in sensor system capabilities cannot be fully exploited in training against the MK-39. The DCAST web based scheduling tool has been installed for Fleet Area Control and Surveillance Facility Pearl Harbor (FACSFAC PH), and is planned for PMRF at an undetermined date. EC Threats went from Yellow to Green, and Scoring & Feedback from Green to Yellow. The number and type of emitters available support the EW training requirement, but lack an automatic EW scoring system. The AAW Airspace score went from Green to Yellow due to no AAW airspace over land area. Land Area went from Yellow to Green because land area is not available and does not meet AAW requirements; but impact is minimal. Other range complexes are assigned to meet the requirement. ASUW Scoring & Feedback went from Green to Yellow due to a lack comprehensive Time and Space Position Information (TSPI) instrumentation and scoring and feedback system for Fast Attack Craft/Fast Inshore Attack Craft (FAC/FIAC) training requirements. The MW Scoring & Feedback score went from Green to Yellow. The range lacks instrumented mine shapes. AMW Airspace went from Green to Yellow due to insufficient airspace over land. There is no supersonic flight in AMW airspace. EXW was not assigned as a separate PRIMAR in this assessment; the range capability document lacks EXW range requirements to conduct a gap analysis. EXW type activities occurring in HRC are assigned to other primary mission areas (PRIMAIR) and analyzed collectively in the other eight PRIMAR.

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Encroachment Scores	8.96	8.44	8.44	8.36	8.23

Encroachment assessments for CY2008 were different than for CY2009– CY2011. The algorithm for the overall assessment score for 2009–2011 was revised from the original algorithm used in 2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009–CY2011 provide a more accurate assessment of encroachment. The assessments reveal there have been few encroachment changes from year to year, with relatively constant overall scores from CY2009–CY2014. The Hawaii RCMP update began October 2010. The National Marine Fisheries Service proposal for Hawaiian monk seal (E) critical habitat designation has proposed national security exclusions for the Hawaiian Range Complex ranges with the exception of Kaula, Barbers Point Underwater Range, and Ewa Training Minefield. The Navy continues to request a national security exclusion from critical habitat designation for Kaula, Barbers Point Underwater Range and Ewa Training Minefield. Designation in these areas has the potential to significantly impact the ability of the Pacific Fleet to maintain a high degree of readiness.

Hawaii Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strike Warfare (STW)	●	Users are unable to conduct low-level ingress over land to an air-to-ground range area with a realistic strike package. This reduces realism and inhibits tactics development. There is no solution due to the unavailability of land and airspace.
	Electronic Combat (EC)	●	Limited landspace prevents use of real vice simulated assets. This reduces realism and inhibits tactics development. There is no solution due to the unavailability of landspace.
	Anti-Air Warfare (AAW)	●	Airspace over land is required for ACM training. There is no landspace beneath any AAW training space in the HRC. This reduces realism by preventing detection and targeting of terrain following aircraft. There is no land/airspace available to solve this problem.
	Naval Special Warfare (NSW)	●	Range lacks maneuver space with a beachfront, lacks live fire areas, and lacks MOUT facilities. This segments training, thereby reducing realism; inhibits tactics; and reduces live fire proficiency. There is no solution to shortfall due to lack of available land.
Airspace	Strike Warfare (STW)	●	Range lacks low-level ingress over land to an air-to-ground range area with for realistic strike package. Reduced realism inhibits tactics development. No solution due to unavailability of land and airspace.
	Anti-Air Warfare (AAW)	●	Users are unable to conduct AAW over land due to lack of over land airspace. This reduces realism and inhibits tactics development. There is no solution due to unavailability of land and airspace.
	Amphibious Warfare (AMW)	●	Range has insufficient airspace over land to support AMW aviation activity meaning no supersonic flight in AMW airspace near and over land. This reduces realism and inhibits tactics development. There is no solution due to unavailability of land and airspace.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Hawaii Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Underseaspace	Mine Warfare (MW)	●	If NOAA expands the HIHWNMS Sanctuary to include Niihau, the Kingfisher shallow water training minefield will lie within Sanctuary boundaries. This could result in closure of the minefield. Navy lawyers are taking action to mitigate impacts to Navy operations. There is no completion date identified.
Targets	Strike Warfare (STW)	●	On Kaula Island there are no raked, strafe, structural, revetted, or moving targets. There are no urban or moving targets. The range does not meet requirements for live fire and realistic strike missions. This reduces realism and reduces live fire proficiency. Kaula Island is inert only with limited acreage and capability to support targets. Navy recommends coordination with the U.S. Army to upgrade Pohakuloa Training Area (PTA) targets to meet training requirements. There is no completion date identified.
	Anti-Surface Warfare (ASUW)	●	While the basic level training target requirements are green, the intermediate level training target requirements are not available in sufficient quantity or variety. This reduces realism. Range recommends to acquire additional surface targets. There is no completion date identified.
	Mine Warfare (MW)	●	The existing mine training field does not realistically portray the threat environment. This reduces realism, inhibits tactics, and limits application of new weapons technologies. The situation will get worse when Organic Mine Counter Measures (OMCM) systems are deployed if improvements are not made. Anticipated deployment of new training mine fields are to be determined. There is no completion date identified.
	Naval Special Warfare (NSW)	●	Range targets are not available. Units typically create their own targets without the benefit of realism. This inhibits tactics development and reduces live fire proficiency. Navy recommends to fund portable targets to meet NSW training requirements. There is no completion date identified.
Threats	Strike Warfare (STW)	●	Adequate quantity and types of threat OPFOR are not available. This reduces realism and inhibits tactics development. Range recommends to acquire EC systems that provide a high density, multi-threat axis capability. There is no completion date identified.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Amphibious Warfare (AMW)	●	The variety of available beaches and lack of sub-surface/surfline/beach obstacles is problematic. This reduces realism and inhibits tactics development. There is no solution due to a lack of available beachfront and realistic obstacles.
Scoring & Feedback System	Strike Warfare (STW)	●	Instrumented scoring and debriefing capabilities are not available. Performance, scoring, and evaluation of training is required for effective training. This inhibits tactics development and reduces live fire proficiency. Navy recommends improve scoring and feedback capabilities by adding a scoring capability at PTA-PMRF bombing ranges. There is no completion date identified.
	Electronic Combat (EC)	●	Lack of Instrumented scoring and debriefing capabilities limits value of training to the Fleet, inhibits tactics development, and reduces quality of debrief information. There is no completion date identified.
	Anti-Air Warfare (AAW)	●	The available system lacks required capacity and needs upgrades to prevent obsolescence. There is a lack of adequate instrumentation that reduces the overall effectiveness of flights due to lower quality debrief information. Navy recommends to invest in additional or new equipment to upgrade current systems. There is no completion date identified.
	Anti-Surface Warfare (ASUW)	●	Range use requires comprehensive TSPI instrumentation in support of Counter- FAC/FIAC tactics and training requirements. The system lacks required capacity and needs upgrades to prevent obsolescence. Navy recommends to invest in additional or new equipment to upgrade current systems. There is no completion date identified.
	Mine Warfare (MW)	●	Mine fields lack instrumentation. Mine shapes are not instrumented. Navy recommends to invest in additional or new equipment to upgrade current systems. There is no completion date identified.
	Anti-Submarine (ASW)	●	BARSTUR use is degraded due to hydrophone array failures. Efforts to extend BARSTUR service life were completed in 2011. Four of five arrays were repaired, subsequently one array has failed. Refurbishment/ replacement of the aging BARSTUR hydrophone array is required before critical failure. The range recommends total replacement of the range arrays. There is no completion date identified.

Hawaii Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Range Support	Strike Warfare (STW)	●	PMRF has degraded radars, communications, and network scheduling systems that need replacements or upgrades to maintain more safe and effective UAS and STW training. PMRF radar systems facilitate STW training into and out of the PTA range and during fleet training events. UAS operations are limited by airspace restrictions and track integration with fleet training events. STW training is degraded due to sub-standard PMRF radar monitoring and control. Navy recommends coordination with FAA to identify UAS specific requirements to facilitate safe and tactically significant UAS operations. PMRF may also require DCAST web scheduling system installation.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Threatened & Endangered Species	Strike Warfare (STW)	●	Restrictions center around the protection of numerous migratory birds on Kaula Island. Rather than implement costly mitigation measures, operations have been modified to minimize impacts to protected species. These restrictions have been self-imposed by the Navy and without any direction from the regulators. Restrictions create large avoidance areas, reduce training days, prohibit certain training events, and reduce range access. To comply with the MMPA and the ESA, the Record of Decision (ROD) concluded that the Navy "will limit Kaula Island targeting for air to surface weapons delivery to the southeast tip of the island" and only seasonally when marine mammals are not present. No remedy is anticipated or planned. In addition, since finalization of Hawaiian Range Complex/Pacific Missile Range Facility (HRC/PMRF) Final/Overseas Environmental Impact Statement (FEIS/OEIS), federal and state environmental regulators and NGOs are focusing even more on the populations and habitat, both land and marine, on/around Kaula Island. Sea bird population surveys by vessel were conducted by USN contractors and staff the week of July 20, 2009. This is the first such survey in more than 10 years and was required pursuant to HRC/PMRF FEIS/OEIS. Future potential impacts based on such studies cannot be predicted. Possible efforts to impose further restrictions on usage are uncertain.
Munitions Restrictions	Strike Warfare (STW)	●	To comply with the MMPA and the ESA, the Navy will limit Kaula Island targeting for inert air-to-surface weapons delivery to the southeast tip of the island. Restrictions create large avoidance areas, reduce training days, prohibit certain training events, and reduce range access. No remedy anticipated or planned.
Spectrum	Strike Warfare (STW)	●	Employment of Link 16 is restricted. Restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief and to develop encroachment strategies that will reduce encroachment while ensuring pending use of emerging spectrum technologies. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Hawaii Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Maritime Sustainability	Strike Warfare (STW)	🟡	Maritime protective and mitigation measures undertaken in compliance with regulatory requirements have resulted in training restrictions that reduce training flexibility and ultimately reduce training realism. All at-sea training is impacted to some degree; impacts are most significant to integrated warfare training using active underwater acoustic sources. The Navy and National Marine Fisheries Service (NMFS) have developed science based protective and mitigation measures that adequately protect marine species while accommodating military readiness activities. The Navy continues to develop Environmental Impact Statements and obtain permits and authorizations for its range complexes to ensure military training complies with applicable laws and regulations. Litigation risks remain a concern, entailing the potential to delay or further restrict training, despite the protective and mitigation measures applied by the Navy in compliance with the MMPA and the ESA. Endangered species/critical habitat encroachment from the North Atlantic right whale has created avoidance areas that have resulted in some reduction of training days and prohibits certain training events. This area is relatively small in scope, however, if these types of restrictions were applied to other species/areas, there would be significant impacts to readiness through reduction in range access, segmentation of training/reduction in realism, limits on the application of new technologies, raised flight altitudes, reduced live fire proficiency, increased personnel tempo, and increased O&M costs. The Navy will continue to invest in marine mammal research; rely on scientifically valid empirical data results as basis of marine mammal mitigation development; factor mitigation effectiveness into permit requests and continue education of Fleet units to adhere to the maritime protective and mitigation measures and public education outreach efforts. Navy's authorizations under the MMPA and ESA include an adaptive management approach that includes continually evaluating existing mitigation measures for their potential impacts on training. If impacts on training from mitigation measures are identified and documented, Navy will raise these impacts with NMFS for resolution during an annual adaptive management review process.
	Anti-Air Warfare (AAW)	🟡	Same as above.
	Anti-Surface Warfare (ASUW)	🟡	Same as above.
	Mine Warfare (MW)	🟡	Same as above.
	Amphibious Warfare (AMW)	🟡	Same as above.
	Anti-Submarine (ASW)	🔴	NOAA plans to expand the Hawaiian Islands Humpback Whale National Marine Sanctuary (HIHWMNS) to include Niihau. Sanctuary boundaries would extend to within 4000 yds of Barking Sands Underwater Range (BARSTUR). Lawsuits filed in protest could result in temporary or indefinite suspension of ASW training. Navy lawyers met with NOAA lawyers, but the results were inconclusive. No anticipated date for resolution.
Airspace	Strike Warfare (STW)	🟡	Due to competition for the same airspace and scheduling conflicts, at times, usage of the airspace is limited and flights may be cancelled. In general, commercial and private aviation conflicts with Naval operations throughout the range complex. Conflict encroachment prohibits certain training events in the area. Commercial traffic in the airspace causes delays and segments training. Navy continues to coordinate scheduling of airspace with primary range users and the FAA.
	Anti-Air Warfare (AAW)	🟡	Same as above.
Adjacent Land Use	Strike Warfare (STW)	🟡	The STW range is insufficient in size to support all requirements. Land withdrawal/procurement is problematic due to development/other factors. There is insufficient range size that segments training, reduces realism, prohibits certain training events, and limits use of advanced technologies. There is no known remedy.
Cultural Resources	Strike Warfare (STW)	🟡	There are cultural sites and resources throughout the Hawaii Range Complex. Some locations, Kaula Islet in particular, are coming under increased scrutiny by Native Hawaiian activists. The presence of cultural resources within the training area creates large avoidance areas, prohibits certain training events, reduces range access, segments training and reduces realism, inhibits new tactics development, and greatly increases O&M costs. The Military Services have implemented training procedures to protect and conserve the cultural resources in the Hawaii Range complex.

Hawaii Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Range Transients	Anti-Surface Warfare (ASUW)	●	Range transients involving commercial tour and dive boats, sport and private fishing vessels, and sail and motor pleasure craft encroach on training, either by delaying events or forcing relocation to less than optimum times and locations. Commercial and recreational vessel encroachment creates avoidance areas and segments training, reducing realism. The Navy will continue to pursue opportunities to inform industry and the public of the impact of range transient encroachment on at-sea OPAREAS and Navy readiness.
	Mine Warfare (MW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Jacksonville Assessment Details

Range Mission Description

The Jacksonville Range Complex supports all Navy warfare areas except Amphibious Warfare (AMW) and Naval Special Warfare (NSW). It consists of two surface and subsurface operating areas with supporting airspace and three land ranges supported by airspace. Both local unit level training and large scale Carrier Strike Group exercises are supported.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strike Warfare	●	●	●	●	●	●	●		●				
Electronic Combat	●	●	●	●	●	●	●		●				
Anti-Air Warfare	●	●	●		●	●	●		●				
Anti-Surface Warfare		●	●	●	●	●	●		●				
Mine Warfare		●	●	●		●			●				
Amphibious Warfare													
Anti-Submarine		●	●	●	●	●	●		●				
Naval Special Warfare													
Expeditionary Warfare													

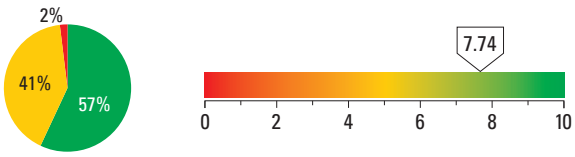
Legend: FMC ● PMC ● NMC ●

Encroachment Data

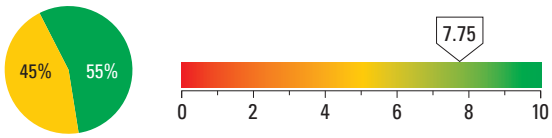
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strike Warfare	●	●	●	●	●	●	●	●	●	●	●	●
Electronic Combat	●		●		●	●	●	●				●
Anti-Air Warfare			●		●	●	●	●				●
Anti-Surface Warfare			●	●	●				●			●
Mine Warfare			●	●	●				●			●
Amphibious Warfare												
Anti-Submarine			●	●	●				●			●
Naval Special Warfare												
Expeditionary Warfare												

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

The capability attribute most impacting range mission performance is Scoring & Feedback Systems. The mission area most severely impacted is ASW. The OEIS/EIS for the Undersea Warfare Training Range (USWTR) was completed on 6/26/2009, and the JAX OPAREA USWTR site was designated as the operationally preferred USWTR site alternative.

Summary Observations

Spectrum, Maritime Sustainability, and Airspace are the encroachment factors having greatest impact on training. ASUW, MW, and ASW are the mission areas with the greatest encroachment impacts on training. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations. Education of Fleet units to adhere to maritime protective and mitigation measures will continue. The Navy will continue to coordinate with the FAA to minimize space launch impacts on training activities.

Jacksonville Assessment Details

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Capability Scores	7.73	7.61	7.61	7.74	7.74

The STW airspace re-evaluated from Green in 2008 to Yellow in 2009 and beyond. The value was changed from Green to Yellow for consistency in impacts for all Atlantic ranges and was based on a review by Fleet Forces (USFF) and a determination that airspace restrictions to and from Jacksonville were not significantly different than access at VACAPES and Cherry Pt. MW Targets and Scoring & Feedback changed to White based on USFF evaluation that TSPI Instrumented scoring data and dedicated mine target shapes are not required in the JAX OPAREA.

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Encroachment Scores	8.51	7.50	7.50	7.38	7.75

Encroachment assessments for CY2008 were different than for CY2009–2012. The algorithm for the overall assessment score for 2009–2012 was revised from the original algorithm used in 2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009–2012 provide a more accurate assessment of encroachment. The assessments for the latter years reveal there has been little encroachment change from year to year, with relatively constant overall scores through to 2012. As population growth continues in the Jacksonville area, there will be increased competition for spectrum bandwidth as G3 and G4 telecommunications increase. Spectrum competition may add increased pressure on the Navy's ability to use radar, communications, EC, and other military systems. The JAX RCMP update was completed in June 2014. The OPAREA EAP is complete. DOI and private energy interests, to include foreign investment and acquisition in the vicinity of the OCS, are increasing as domestic energy demand builds. Naval offshore operating areas and training events may be affected. High priority areas include training ranges and seaspace in and adjacent to all Navy OPAREAs. The Navy and OSD continue to work closely with the Fleets and BOEM to resolve issues of combined use of the OCS important to both agencies. Fleet review and analysis of impacts from both oil/gas and wind energy "lease sale" areas (Mission Critical Areas-MCAs) have been reviewed and forwarded to OSD. DoD and DOI coordination continues. JAX had no emerging encroachment issues during 2014 that affect JAX operations. The 2014 JAX encroachment assessment remains the same as 2012.

Jacksonville Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strike Warfare (STW)	●	Available landspace does not fully support size or topography requirements for placement of required number of targets. The use of live ordnance is supported only at Pinecastle and the use of Joint, HE stand-off munitions is not authorized. The use of flares is restricted. No land area supports NSFS training, nor standoff Precision Guided Munitions (PGM) delivery. This prohibits certain training events; reduces realism; and increases personnel optempo. Navy recommends identifying east coast land areas of sufficient size to support standoff weapons training. There is no completion date identified.
	Anti-Air Warfare (AAW)	●	Range landspace does not fully support size or topography requirements or support surface combatant detection of aircraft over land. The use of flares is restricted. This prohibits certain training events; reduces realism; and increases personnel optempo. Overland ACM training is conducted at Fallon Range Training Complex. There are no additional land options available.
Airspace	Strike Warfare (STW)	●	The range land area and its associated restricted airspace areas are adjacent to JAX at-sea airspace, requiring MOA for transition between the seaspace and landspace areas. OPAREAs lack characteristics for realistic tactical approaches and do not support the area size to meet minimum training requirements. This transit reduces realism; inhibits new tactics development; and reduces live fire proficiency. There are no local options for increasing land availability. Navy recommends coordination and investment in new MOAs and/or restricted airspace to reduce the impact on flight operations by increasing airspace area and altitudes. There is no completion date identified.
Targets	Strike Warfare (STW)	●	The range urban area is too small, there are no Land Attack Cruise Missile (LACM) or NSFS land area targets, no moving targets, and targets lack infrared signatures. This prohibits certain training events; reduces realism; limits application of new weapon technologies, inhibits tactics development, reduces live fire proficiency, increases personnel optempo, and increases O&M costs. The Navy recommends investing in required targets. There is no completion date identified.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Jacksonville Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Threats	Electronic Combat (EC)	🟡	EC threat representation does not fully support EC threat levels 3 or 4 for required mission areas. The existing instrumentation systems are becoming obsolete and unsupportable through the FYDP. This prohibits certain training events, reduces realism, limits application of new weapon technologies, inhibits tactics development, reduces live fire proficiency, increases personnel optempo, and increases O&M costs. The Navy recommends updating upgrade schedule to preclude severe degradation of system capability. The completion date is not identified.
	Anti-Air Warfare (AAW)	🟡	The range has no helicopter or supersonic threat OPFOR. This reduces realism, increases personnel optempo, and increases O&M costs. Navy recommends increase the number and type of commercial air services. There is no completion date identified.
	Anti-Submarine (ASW)	🟡	The range has limited dedicated live submarines, surface ships, or aircraft to serve in the OPFOR role. This prohibits certain training events, reduces realism, inhibits tactics, increases personnel optempo, and increases O&M costs. The Navy recommends investing in additional threat OPFOR and increasing availability of submarines through the Diesel Electric Submarine Initiative (DESI) and aircraft through CAS. There is no completion date identified.
Scoring & Feedback	Strike Warfare (STW)	🟡	The range has incomplete TSPI & EC&C OPAREA coverage and is in need of scoring, RTKN and M&S systems. This increases personnel optempo and increases O&M costs. The Navy recommends expanding and improving 2-D and 3-D coverage of the op-area, investing in JNTC compliant M&S equipment, and improving debrief capabilities. There is no completion date identified.
	Electronic Combat (EC)	🟡	Same as above.
	Anti-Air Warfare (AAW)	🟡	OPAREA coverage is not complete, Modeling & Simulation is inadequate, and there is no RTKN. Existing instrumentation systems are not supportable through the FYDP. This reduces realism, inhibits tactics, increases personnel optempo, and increases O&M costs. Navy recommends expanding and improving 2-D and 3-D coverage of the op-area, investing in JNTC compliant M&S equipment, and improving debrief capabilities. No completion date is identified.
	Anti-Surface Warfare (ASUW)	🟡	Same as STW.
	Anti-Submarine (ASW)	🔴	An underwater tracking range is funded but not constructed for support of scoring capability, M&S, or post mission feedback. This prohibits certain training events, reduces realism, limits weapon technologies, inhibits tactics, reduces live fire proficiency, increases personnel optempo, and increases O&M costs. An underwater range has been funded; planned for FY2019. The Navy recommends to expand and improve 2-D and 3-D coverage of the OPAREA, invest in JNTC compliant M&S, and improve debrief capabilities.
Range Support	Strike Warfare (STW)	🟡	A lack of a web-based scheduling system with pre-event, real-time, and post-event modules precludes most efficient scheduling and documenting of range usage. Post-event reporting is particularly critical for ordnance expenditures or active sonar usage in at-sea OPAREAs since MMPA permits require the Navy to periodically report these values. Non-compliance or inaccurately reporting post-event values to regulators risks range access or prohibitions on training events that involve active sonar or high explosives at-sea. OPNAV N98 has determined that the DCAST system will be the SUA scheduling tool for all FACSFACs and all other ATC facilities with SUA reporting requirements. DCAST system programmers are conducting site visits to the FACSFACs to gather operating area and airspace data to develop DCAST for each location.
	Electronic Combat (EC)	🟡	Same as above.
	Anti-Air Warfare (AAW)	🟡	Same as above.
	Anti-Surface Warfare (ASUW)	🟡	Same as above.
	Mine Warfare (MW)	🟡	Same as above.
	Anti-Submarine (ASW)	🟡	Same as above.

Jacksonville Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Strike Warfare (STW)	●	Scrub jays, indigo snakes, and gopher tortoises at Pinecastle and Rodman and Manatees at Lake George contribute to training restrictions in their affiliated range and training areas. Species habitat encroachment creates avoidance areas, reduces range access, and inhibits new tactics development. The Navy observes species mitigation measures at Pinecastle, Rodman, and Lake George.
Spectrum	Strike Warfare (STW)	●	Employment of Link 16, SPY-1 radar, SPS 49 radar, and IFF are restricted. Restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief and to develop encroachment strategies that will reduce encroachment while ensuring pending use of emerging spectrum technologies. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.
Maritime Sustainability	Anti-Surface Warfare (ASUW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.
Airspace	Strike Warfare (STW)	●	During space launches at Cape Canaveral, the FAA closes southern portions of the Jacksonville OPAREA and associated airspace, depending on launch parameters. Closing portions of the SUA and OPAREA impacts several warfare areas that use the SUA and OPAREAs. Airspace restrictions create avoidance areas, reduce training days, reduce range access, segment training/reduce realism, increase personnel tempo, and increase O&M costs. The Navy will continue to coordinate with the FAA to minimize space launch impacts on training activities.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.
Range Transients	Anti-Surface Warfare (ASUW)	●	Range transients, involving commercial shipping, commercial fishing, and private pleasure boating encroach on training, either by delaying events or forcing relocation to less than optimum locations. Commercial vessel and recreational vessel encroachment creates avoidance areas and segments training/reduces realism. The Navy will continue to pursue opportunities and use designated processes to inform industry and the public of the impact of range transient encroachment on at-sea OPAREAS and Navy readiness.
	Mine Warfare (MW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Japan Assessment Details

Range Mission Description

Designated ocean areas (seaspace and underseaspace) and associated airspace in the Western Pacific in the vicinity of Japan support Forward Deployed Naval Forces as well as those forces conducting training readiness in Strike Warfare, Electronic Warfare, Antiair Warfare, Antisurface Warfare, Mine Warfare, and Antisubmarine Warfare.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strike Warfare	NMC	NMC	FMC	FMC	NMC	NMC	NMC		FMC				
Electronic Combat	NMC	FMC	FMC	FMC	NMC	NMC	NMC		FMC				
Anti-Air Warfare	PMC	PMC	FMC		PMC	PMC	NMC		FMC				
Anti-Surface Warfare		FMC	FMC	FMC	PMC	PMC	PMC		FMC				
Mine Warfare		FMC	PMC	PMC	PMC	PMC	PMC		FMC				
Amphibious Warfare													
Anti-Submarine		PMC	PMC	PMC	PMC	PMC	PMC		FMC				
Naval Special Warfare													
Expeditionary Warfare													

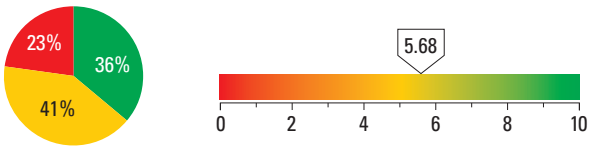
Legend: FMC, PMC, NMC

Encroachment Data

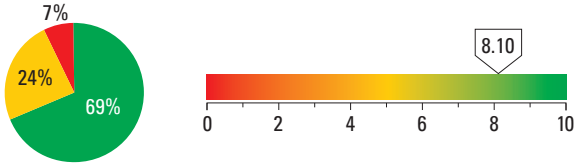
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strike Warfare			PMC	PMC	FMC		PMC		FMC			FMC
Electronic Combat			NMC		FMC		FMC					FMC
Anti-Air Warfare			NMC		FMC		PMC					FMC
Anti-Surface Warfare			PMC	PMC	FMC				FMC			FMC
Mine Warfare			FMC	FMC	FMC				FMC			FMC
Amphibious Warfare												
Anti-Submarine			FMC	PMC	FMC				FMC			FMC
Naval Special Warfare												
Expeditionary Warfare												

Legend: Minimal, Moderate, Severe

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

The capability attributes most impacting range mission performance are Landspace, Targets, Threats, and Scoring & Feedback Systems. The assigned mission areas most severely impacted are STW, EW, AAW. It is projected that the range will continue with the development of the Tactical Combat Training System (TCTS) and continue with and increase the Portable Acoustic Range (PAR)/Portable Undersea Tracking Range (PUTR) deployments. The range will also continue with the development and deployment of the Multi-Purpose Range Craft (MPRC) to provide additional range support improvement.

Summary Observations

Spectrum is the encroachment factor having the greatest encroachment impact on training. EC and AAW are the mission areas experiencing the greatest encroachment. The Navy continues to coordinate with Government of Japan (GOJ) agencies to seek encroachment relief and to develop encroachment strategies that will reduce training restrictions and ensure unfettered use of training ranges and operating areas.

Japan Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	5.45	5.45	5.45	5.45	5.45	**Encroachment Scores**	9.40	8.28	8.28	8.10	8.10
The capability assessment has been stable from year to year, with relatively constant overall scores for CY 2010 and 2011, but has since dropped for CY 2012 (and beyond) due to a re-evaluation. A multi-purpose range craft has deployed to Seventh Fleet that will support aerial drone, MK-30 (ASW target), and mine shape launch and recovery, deployment and recovery of the portable ASW range, and electronic warfare training (limited). The Navy is evaluating various locations for deployment of the portable ASW range. The Navy, in coordination with U.S. Forces Japan, Government of Japan, and Japan Civil Aviation Bureau have worked out plans for new training airspace to support U.S. Navy aircraft based in Japan, moving from NAF Atsugi to MCAS Iwakuni in 2017 timeframe.						Encroachment assessments for CY2008 were different than for CY2009, 2010, and 2011. The algorithm for the overall assessment score for 2009–2011 was revised from the original algorithm used in 2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009, 2010, and 2011 provide a more accurate assessment of encroachment. The assessments for the latter three years reveal there has been little encroachment change from year to year, with relatively constant overall scores for CY2009, 2010, and 2011. There is little indication encroachment pressures will change in the foreseeable future. There are no emerging encroachment issues that affect Japan operations. The 2015 assessment remains the same as 2012.					

Japan Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strike Warfare (STW)	🔴	There is no Navy controlled range available. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits tactics development, increases personnel optempo, and increases O&M costs. Navy will pursue opportunities with other services, countries, and in-theater ranges. R130 (inert A-G range) off Misawa is available, but limited supporting airspace is available for new weapons. USAF created a limited use Altitude Reservation (ALTRV) Gaicho that partially alleviates problem and may allow for joint direct attack munitions (JDAM) training. Limited training using ALTRV Gaicho is on-going (this benefits Growler expeditionary deployments to Misawa). Additional mitigation effects are also realized by airwings conducting their Strike Fighter Advance Readiness Program (SFARP) at the Fallon Range Training Complex (FRTC).
	Electronic Combat (EC)	🔴	There is no Navy controlled range available. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits tactics development, increases personnel optempo, and increases O&M costs. Navy will pursue multi-purpose range craft (MPRC) & EC capability. MPRC arrived in Okinawa Oct 2013. The MPRC contract has just recently been awarded. The mitigating impact of MPRC will be evaluated this year. Additional mitigation effects are also realized by airwings conducting SFARP at the FRTC.
	Anti-Air Warfare (AAW)	🟡	There is minimal access to overland airspace which impacts AAW training capabilities. This also prohibits certain training events, reduces realism, limits application of new technologies, inhibits tactics development, increases personnel optempo, and increases O&M costs. Navy will pursue opportunities with other services, countries, and in-theater ranges. There is no completion date identified.
Airspace	Strike Warfare (STW)	🔴	There is no Navy controlled range available, but there is some airspace and there are ground targets available. A projected airwing move in 2014 will downgrade training due to limited airspace at the new area. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits tactics development, increases personnel optempo, and increases O&M costs. The Navy will pursue access to airspace that will support this training. There is no completion date identified.
	Anti-Air Warfare (AAW)	🟡	No overland airspace supports AAW training. A projected airwing move in 2014 will downgrade training due to limited airspace at the new area. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits tactics development, increases personnel optempo, and increases O&M costs. Navy will pursue opportunities with other services, countries, and in-theater ranges. There is no completion date identified.
	Anti-Submarine (ASW)	🟡	Sufficient airspace exists, but there is no associated UTR which inhibits tracking and scoring of torpedo shots. This prohibits certain training events and segments training/reduces realism. Units currently deploy to the Okinawa portion of the range complex to make use of the Portable Undersea Tracking Range (PUTR) when a UTR is required. MPRC arrived in Okinawa October 2013. Navy will continue the development of the MPRC with PUTR capability to operate in conjunction with existing airspace. Navy will also continue the development of the MPRC concept of operations (CONOPS) for a 3rd deployment per year and bring the MPRC to the Japan Complex. The MPRC contract has just recently been awarded. The mitigating impacts of MPRC will be evaluated this year.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Japan Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Seaspace	Mine Warfare (MW)	🟡	Lack of shallow water training areas and geographic references limit MIW training. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits tactics development, increases personnel optempo, and increases O&M costs. Navy will evaluate the feasibility of creating an OPAREA adjacent to land to support shallow water and geographic reference points. A Joint Committee is working to identify water area near Iwakuni. There is no completion date identified.
	Anti-Submarine (ASW)	🟡	There is no permanent UTR. This prohibits certain training events and segments training/reduces realism. Units currently deploy to the Okinawa portion of the range complex to make use of the PUTR when a UTR is required. MPRC arrived in Okinawa October 2013. Navy will continue the development of the MPRC with PUTR capability to operate in conjunction with existing airspace. Navy will also continue the development of the MPRC concept of operations (CONOPS) for a 3rd deployment per year and bring the MPRC to the Japan Complex. The MPRC contract has just recently been awarded. The mitigating impacts of MPRC will be evaluated this year.
Underseaspace	Mine Warfare (MW)	🟡	There is no dedicated undersea space for Shock Wave Action Generator (SWAG) or mine avoidance training. The sea bottom type does not have required variance, has insufficient shallow water; and has no permanent Undersea Warfare Center Training Range (USWTR). This prohibits certain training events, reduces realism, limits application of new technologies, inhibits tactics development, increases personnel optempo, and increases O&M costs. Navy will evaluate the feasibility of installing a mine training range with instrumented mine shapes, false targets, bottom mines and mines for SWAG training. Navy will also evaluate the feasibility of creating an OPAREA with shallow water. There is no completion date identified.
	Anti-Submarine (ASW)	🟡	The OPAREA waters in the Japan portion of the Range Complex do not support training in depths less than 600 ft. Littoral ASW training, with training waters adjacent to land, is not feasible. Lack of a permanent UTR precludes tracking torpedo shots against targets and prevents scoring. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits tactics development, increases personnel optempo, and increases O&M costs. Units must travel outside of the Japan portion of the Range Complex to conduct shallow water ASW training. Units currently deploy to the Okinawa portion of the range complex to make use of the PUTR when a UTR is required. Often, training occurs during coordinated training events or major exercises. Navy will evaluate the potential to procure a permanent UTR capability. MPRC arrived in Okinawa October 2013. Navy will continue the development of the MPRC with capability to deploy PUTR and continue the development of the MPRC CONOPS for a 3rd deployment per year and bring the MPRC to the Japan Complex. The MPRC contract has just recently been awarded. The mitigating impacts of MPRC will be evaluated this year.
Targets	Strike Warfare (STW)	🔴	There is no Navy controlled range available. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits tactics development, increases personnel optempo, and increases O&M costs. Navy will provide A-G targets and establish supporting SUA. There is no completion date identified.
	Electronic Combat (EC)	🔴	No targets exist, there is limited land area, and there are political and frequency spectrum constraints. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits tactics development, increases personnel optempo, and increases O&M costs. Navy will pursue MPRC EC Capability. MPRC arrived in Okinawa October 2013. The MPRC contract has just recently been awarded. The mitigating impacts of MPRC will be evaluated this year.
	Anti-Air Warfare (AAW)	🟡	There are no supersonic targets available and no dedicated targets available. This reduces live fire proficiency, increases personnel optempo, and increases O&M costs. Navy will increase the availability of commercial air services and pursue an MPRC with target capabilities. MPRC arrived in Okinawa October 2013. The MPRC contract has just recently been awarded. The mitigating impacts of MPRC will be evaluated this year.
	Anti-Surface Warfare (ASUW)	🟡	The quantity and types of targets are limited. This prohibits certain training events, reduces realism, and reduces live fire proficiency. Navy will increase the availability of targets. MPRC arrived in Okinawa October 2013. The MPRC contract has just recently been awarded. The mitigating impacts of MPRC will be evaluated this year.
	Mine Warfare (MW)	🟡	There are no dedicated or instrumented targets available. Units will typically provide their own targets where feasible. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits tactics development, increases personnel optempo, and increases O&M costs. Navy will evaluate the feasibility of installing a mine range with instrumented shapes, false targets, bottom mines and mines approved for SWAG training. There is no completion date identified.
	Anti-Submarine (ASW)	🟡	Live and virtual targets are not available. Expendable targets provided by the unit conducting the training are usually used. This reduces realism, limits application of new technologies, inhibits tactics development, increases personnel optempo, and increases O&M costs. Navy will establish an ASW targets unit. There is no completion date identified.

Japan Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Threats	Strike Warfare (STW)	🔴	There is no dedicated OPFOR but limited OPFOR is available. This reduces realism, limits application of new technologies, and inhibits tactics development. Navy recommends improve availability of CAS and EC augmentation. MPRC arrived in Okinawa October 2013, it will provide rudimentary EW training capabilities. The Mission Area will remain red until an integrated air defense system (IADS) training capability is provided. There is no completion date identified (and no candidate locations available). The MPRC contract has just recently been awarded. The mitigating impacts of MPRC will be evaluated this year.
	Electronic Combat (EC)	🔴	There is no dedicated OPFOR but limited OPFOR is available. This reduces realism, limits application of new technologies, and inhibits tactics development. Navy recommends to pursue development of joint EC systems and to improve availability of CAS and EC augmentation. MPRC arrived in Okinawa October 2013, it will provide rudimentary EW training capabilities. There is no completion date identified (significant RF limitations/ encroachment inhibit live training support). The MPRC contract has just recently been awarded. The mitigating impacts of MPRC will be evaluated this year.
	Anti-Air Warfare (AAW)	🟡	There is no dedicated OPFOR but limited OPFOR is available. This reduces realism, limits application of new technologies, and inhibits tactics development. Navy recommends to improve availability of CAS and EC augmentation. TCTS will significantly enhance AAW training for aviation units. OPFOR will remain limited.
	Anti-Surface Warfare (ASUW)	🟡	There is no dedicated OPFOR but limited OPFOR is available. This reduces realism, limits application of new technologies, and inhibits tactics development. Navy recommends to improve availability of CAS and EC augmentation. MPRC arrived in Okinawa Oct 2013. It will provide rudimentary EW training capability. There is no completion date identified. The MPRC contract has just recently been awarded. The mitigating impacts of MPRC will be evaluated this year.
	Mine Warfare (MW)	🟡	Same as above.
	Anti-Submarine (ASW)	🟡	Same as above.
Scoring & Feedback	Strike Warfare (STW)	🔴	No permanent instrumentation exists. This reduces realism, limits application of new technologies, inhibits new tactics, and complicates night and all weather training. Navy will continue planned development of TCTS and evaluate the potential to improve training. Navy will also evaluate MPRC potential to support training. There are no scored air to ground ranges for instrumentation identified.
	Electronic Combat (EC)	🔴	No permanent instrumentation exists. This reduces realism, limits application of new technologies, inhibits new tactics, and complicates night and all weather training. While MPRC will provide some training capability, it will not be capable of providing scoring and feedback. MPRC arrived in Okinawa October 2013. The MPRC contract has just recently been awarded. The mitigating impacts of MPRC will be evaluated this year.
	Anti-Air Warfare (AAW)	🔴	Same as STW.
	Anti-Surface Warfare (ASUW)	🟡	No permanent instrumentation exists. This reduces realism, limits application of new technologies, inhibits new tactics, and complicates night and all weather training. MPRC arrived in Okinawa October 2013 and should improve support capability. The MPRC contract has just recently been awarded. The mitigating impacts of MPRC will be evaluated this year.
	Mine Warfare (MW)	🟡	No permanent instrumentation exists. This reduces realism, limits application of new technologies, inhibits new tactics, and complicates night and all weather training. The Navy will evaluate the feasibility of installing a mine range with instrumented shapes, false targets, bottom mines and mines approved for SWAG training and evaluate MPRC potential to support training. There is no completion date identified.
	Anti-Submarine (ASW)	🟡	No permanent instrumentation exists and is not likely to in the future. This reduces instrumented range availability. MPRC arrived in Okinawa October 2013 and should increase availability of PAR/PUTR support. Planning is underway to support instrumented ASW training in 2014. The MPRC contract has just recently been awarded. The mitigating impacts of MPRC will be evaluated this year.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Japan Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Spectrum	Strike Warfare (STW)	🟡	Restrictions on RF emissions limit the use of the Tactical Combat Training System (TCTS). Restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with GOJ agencies to seek spectrum relief and to develop encroachment strategies that will reduce encroachment while ensuring pending use of emerging spectrum technologies.
	Electronic Combat (EC)	🔴	There is no EW training ranges due to RF restrictions. RF restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with GOJ agencies to seek spectrum relief and to develop encroachment strategies that will reduce encroachment while ensuring pending use of emerging spectrum technologies.
	Anti-Air Warfare (AAW)	🔴	Restrictions on RF emissions limit the use of the Tactical Combat Training System (TCTS). Restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with GOJ agencies to seek spectrum relief and to develop encroachment strategies that will reduce encroachment while ensuring pending use of emerging spectrum technologies.
	Anti-Surface Warfare (ASUW)	🟡	All units operating throughout the Joint Okinawa Range Complex (JORC) are precluded from activating SPS-49/SPS-48E radar equipment for test or operational purposes within 12 nm of land areas of Japan or Okinawa. This issue is presently insoluble. Restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with GOJ agencies to seek spectrum relief and to develop encroachment strategies that will reduce encroachment while ensuring pending use of emerging spectrum technologies.
Maritime Sustainability	Strike Warfare (STW)	🟡	Maritime protective and mitigation measures undertaken in compliance with regulatory requirements have resulted in training restrictions that reduce training flexibility and ultimately reduce training realism. All at-sea training is impacted to some degree; impacts are most significant to integrated warfare training using active underwater acoustic sources. The Navy and National Marine Fisheries Service (NMFS) have developed science based protective and mitigation measures that adequately protect marine species while accommodating military readiness activities. The Navy continues to develop Environmental Impact Statements and obtain permits and authorizations for its range complexes to ensure military training complies with applicable laws and regulations. Litigation risks remain a concern, entailing the potential to delay or further restrict training, despite the protective and mitigation measures applied by the Navy in compliance with the MMPA and the ESA. Endangered species/critical habitat encroachment from the North Atlantic right whale has created avoidance areas that have resulted in some reduction of training days and prohibits certain training events. This area is relatively small in scope, however, if these types of restrictions were applied to other species/areas, there would be significant impacts to readiness through reduction in range access, segmentation of training/reduction in realism, limits on the application of new technologies, raised flight altitudes, reduced live fire proficiency, increased personnel tempo, and increased O&M costs. The Navy will continue to invest in marine mammal research; rely on scientifically valid empirical data results as basis of marine mammal mitigation development; factor mitigation effectiveness into permit requests and continue education of Fleet units to adhere to the maritime protective and mitigation measures and public education outreach efforts. Navy's authorizations under the MMPA and ESA include an adaptive management approach that includes continually evaluating existing mitigation measures for their potential impacts on training. If impacts on training from mitigation measures are identified and documented, Navy will raise these impacts with NMFS for resolution during an annual adaptive management review process.
	Anti-Surface Warfare (ASUW)	🟡	Same as above.
	Anti-Submarine (ASW)	🟡	Same as above.
Noise Restrictions	Strike Warfare (STW)	🟡	Users are unable to conduct night carrier landing practice at home base. Aircraft must travel to remote locations for training. Inability to conduct training at their home base location reduces air-wing readiness and impacts the STW and AAW missions. Noise encroachment at Atsugi prohibits certain training events, segments training/reduces realism, reduces training days, limits application of new weapons technologies, and inhibits new tactics development. The CVW-5 move to Iwakuni moved the noise encroachment at Atsugi to Iwakuni (less populated area).
	Anti-Air Warfare (AAW)	🟡	Same as above.

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Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Key West Assessment Details

Range Mission Description

The Key West Range Complex supports training for the Antiair Warfare (AAW) and Naval Special Warfare (NSW) training areas.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strike Warfare													
Electronic Combat													
Anti-Air Warfare	FMC	FMC	FMC		PMC	FMC	PMC		PMC				
Anti-Surface Warfare													
Mine Warfare													
Amphibious Warfare													
Anti-Submarine													
Naval Special Warfare													
Expeditionary Warfare													

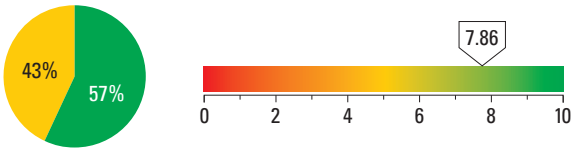
Legend: FMC, PMC, NMC

Encroachment Data

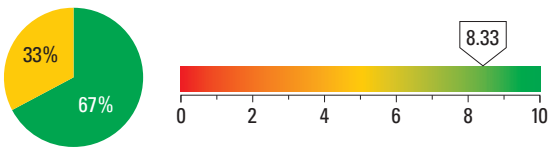
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strike Warfare												
Electronic Combat												
Anti-Air Warfare			Minimal		Minimal		Moderate	Minimal			Moderate	Severe
Anti-Surface Warfare												
Mine Warfare												
Amphibious Warfare												
Anti-Submarine												
Naval Special Warfare												
Expeditionary Warfare												

Legend: Minimal, Moderate, Severe

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

The capability attribute most impacting range mission performance is Scoring & Feedback Systems and the mission area most severely impacted is AAW. There is no immediate change expected.

Note on NSW Assessments: Assessments of Navy Special Warfare (NSW) training are based on actual NSW demand and use of training range capability and space (no assessment made for CY2014).

Summary Observations

Noise Restrictions and Wetlands are the Encroachment Factors having moderate impact on training. AAW is the only Mission Area affected by an encroachments impact on training. The Navy may have to implement actions to restore and enhance airfield clearance safety areas that have been encroached upon by surrounding wetlands.

Key West Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	7.50	7.50	7.50	7.86	7.86	**Encroachment Scores**	9.86	9.55	9.09	8.33	8.33
The ASUW Range Mission Area was deleted in 2011 and the assessment score increased.						Encroachment assessments for CY2008 were different than for CY2009–2012. The algorithm for the overall assessment score for 2009–2012 was revised from the original algorithm used in 2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009–2012 provide a more accurate assessment of encroachment. The assessments for the latter years reveal there has been little encroachment change from year to year, with relatively constant overall scores through to 2012. The small change in the assessment score from CY2009 to CY2010 is based on increased encroachment from noise regarding AAW activities in the vicinity of Dry Tortugas and Fort Jefferson. The ASUW mission area for the range complex was deleted for the 2011 assessment; the assessment dropped from 9.09 to 8.33 because the assessment for ASUW was Green. The Key West RCMP update is complete; the Key West EAP is scheduled to be completed in December 2014. DOI and private energy interests, to include foreign investment and acquisition in the vicinity of the OCS, are increasing as domestic energy demand builds. Naval offshore operating areas and training events may be affected. High priority areas include training ranges and sea space in and adjacent to all Navy OPAREAs. The Navy and OSD continue to work closely with the Fleets and BOEM to resolve issues of combined use of the OCS important to both agencies. Fleet review and analysis of impacts from both oil/gas and wind energy "lease sale" areas (Mission Critical Areas-MCAs) have been reviewed and forwarded to OSD. DoD and DOI coordination continues. Key West had no emerging encroachment issues during 2014 that affect Key West operations. The 2014 Key West encroachment assessment remains the same as 2012.					

Key West Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Targets	Anti-Air Warfare (AAW)		Ranges have minimal target support. Air targets are not available unless scheduled in advance (with a long lead time). This increases personnel optempo and increases O&M costs. The Navy recommends providing targets at the range area. No long-term solution date is set. The current workaround solution is that if sufficient lead time is available to schedule targets, and if the required targets are available, targets may be arranged for training.
Scoring & Feedback System	Anti-Air Warfare (AAW)		Exercise coordination and control are not available over the entire OPAREA, especially for surface ships. Modeling & simulation is not available. Some scoring is available through TCTS. Real Time Kill Notification is available by voice only. This prohibits certain training events; reduces realism; increases personnel optempo; and increases O&M costs. Navy recommends investing in systems to support EC&C, M&S and scoring, and debriefing. No completion date identified.
Range Support	Anti-Air Warfare (AAW)		A lack of a web-based scheduling system with pre-event, real-time, and post-event modules precludes most efficient scheduling and documenting of range usage. Post-event reporting is particularly critical for ordnance expenditures or active sonar usage in at-sea OPAREAs since MMPA permits require Navy to periodically report these values. Non-compliance or inaccurately reporting post-event values to regulators risks range access or prohibitions on training events that involve active sonar or high explosives at-sea. OPNAV N98 has determined that the DCAST system will be the SUA scheduling tool for all Fleet Area Control and Surveillance Facilities (FACSFACs) and all other Air Traffic Control facilities with SUA reporting requirements. DCAST system programmers are conducting site visits to the FACSFACs to gather operating area and airspace data to develop DCAST for each location.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Key West Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Noise Restrictions	Anti-Air Warfare (AAW)	●	Airspeed limits on Key West Complex participating aircraft prohibit certain training events, segment training, reduce realism, and inhibit new tactics development. The Navy completed a noise analyses to determine frequency of sonic booms, potential effects on personnel/property and minimum distance requirements to preclude future noise complaints. The findings of the resulting Environmental Assessment recommended stipulating the expansion of an existing buffer zone around the Dry Tortugas by 2,000 feet, from 18,000 to 20,000 feet, to ensure natural and historic resources would not be impacted.
Wetlands	Anti-Air Warfare (AAW)	●	Wetlands vegetation encroachment obstructs air traffic controllers' lines of site with aircraft and affects radar performance. This air traffic control obstruction could affect access to portions of the Key West range complex airspace. Remedial action currently underway to restore and enhance airfield clearance safety areas.

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Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Mariana Islands Assessment Details

Range Mission Description

The Mariana Islands Range Complex (MIRC) mission is to achieve and maintain Fleet readiness by providing a realistic training environment to support current, emerging, and future training, to include live-fire activities. From this broad mission area, the primary mission of the MIRC is to provide a realistic, all-sensor, live-fire training environment to support the achievement and maintenance of current, emerging, and future combat readiness for the U.S. Navy combat forces. MIRC provides services and equipment to support the U.S. Pacific Fleet, U.S. Marine Corps Forces Pacific, and joint and international forces. Research, Development, Test, and Evaluation (RDT&E) operations are supported on a priority or not-to-interfere basis.

Capability Data

Mission Areas	Capability Attributes												
	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
Strike Warfare	PMC	PMC	FMC	FMC	PMC	NMC	NMC		PMC				
Electronic Combat	FMC	FMC	FMC	FMC	NMC	FMC	NMC		PMC				
Anti-Air Warfare	NMC	PMC	FMC		NMC	NMC	NMC		PMC				
Anti-Surface Warfare		FMC	FMC	FMC	PMC	PMC	NMC		PMC				
Mine Warfare		FMC	PMC	NMC	PMC	PMC	NMC		PMC				
Amphibious Warfare	NMC	NMC	NMC		NMC	NMC	NMC		PMC				
Anti-Submarine		FMC	FMC	FMC	FMC	NMC	PMC		PMC				
Naval Special Warfare	NMC	PMC	PMC	PMC	NMC	PMC	NMC		PMC				
Expeditionary Warfare													

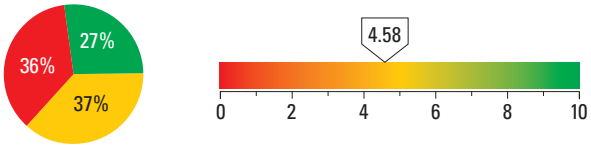
Legend: FMC PMC NMC

Encroachment Data

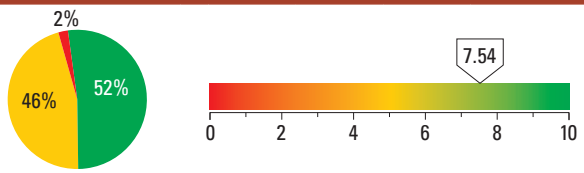
Mission Areas	Encroachment Factors											
	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Strike Warfare	PMC	PMC	PMC	FMC	PMC	FMC	PMC	PMC	FMC	FMC	FMC	PMC
Electronic Combat	FMC		FMC		PMC	FMC	FMC	FMC				FMC
Anti-Air Warfare			PMC		PMC	FMC	PMC	PMC				FMC
Anti-Surface Warfare			PMC	PMC	FMC				FMC			FMC
Mine Warfare			PMC	PMC	FMC				FMC	FMC		PMC
Amphibious Warfare	NMC		PMC	PMC	FMC		FMC	FMC	PMC		PMC	PMC
Anti-Submarine		FMC	PMC	PMC	FMC				FMC			FMC
Naval Special Warfare	PMC	PMC	FMC	FMC	FMC	FMC	FMC	FMC	PMC	FMC	PMC	PMC
Expeditionary Warfare												

Legend: Minimal Moderate Severe

Capability Chart and Scores



Encroachment Chart and Scores



Mariana Islands Assessment Details

Summary Observations

The capability attributes most impacting range mission performance are Scoring & Feedback Systems, Targets and Threats. The mission areas most severely impacted are AMW, AAW, and NSW. Delivery of the range support craft in 2013 addressed range support for ASW targets and partial support for other mission areas (ASUW, AAW, EC, MW).

Note on NSW Assessments: Assessments of NSW training are based on actual NSW demand and use of training range capability and space. Actual Training range capability and space requirements are based on Fleet Readiness Training Plan demands for conventional warfare areas.

Summary Observations

T&E Species/Critical Habitat, Spectrum, and Maritime Sustainability are the encroachment factors with the most impact on training. All mission areas have encroachment issues that have substantial impacts on training. The Navy continues consulting and discussing with MIRC stakeholders on various issues, including encroachment. Discussions incorporate current and future training requirements as they apply to expanded training required primarily of the move of Marine Corps forces to Guam from Okinawa. The Government of Guam also consults with MIRC stakeholders. Additional forces will require supporting training ranges and operating areas on Guam and select islands in the Commonwealth of the Northern Mariana Islands (CNMI). Training requirements and training ranges and operating areas are identified and assessed in the Mariana Islands Range Complex EIS and the Guam and CNMI Relocation EIS, both completed in 2010. A MIRC Airspace EA/OEA has been completed for phase one of a four phase Marianas Airspace Plan. The EA/OEA is under review by the FAA.

Note on NSW Assessments: assessments of NSW training are based on actual NSW demand and use of training range capability and space. Actual training range capability and space requirements are based on Fleet Readiness Training Plan demands for conventional warfare areas.

Historical Information, Results, and Future Projections

Calendar Year	2008	2009	2010	2011	2012
Capability Scores	2.80	2.80	2.80	2.80	3.39

In support of the Marine Corps Guam relocation, the Marine Corps has proposed new small arms, known distance, and maneuver ranges on Guam and Tinian. A .50 caliber machine gun range has been proposed for construction on Guam. Additional training support facilities have been proposed on Guam and Tinian, and additional training on Guam, Tinian, and Pagan. In support of U.S. Air Force training and operational requirements, a new divert airfield has been proposed for aircraft operating from Andersen Air Force Base on Guam. To more safely and securely accommodate Navy and other service training requirements, a four-phase airspace plan has been proposed that would reconfigure existing special use airspace and create new warning areas and restricted areas for conduct of military training, and an expanded danger zone around FDM. NEPA for phase one of the plan was assessed in the 2013 Mariana Islands Range Complex Airspace EA/OEA. FAA review and rulemaking for phase one is pending. A Mariana Islands Test and Training (MITT) EIS/OEIS is being conducted that incorporates phase one of the airspace plan into its baseline and preferred alternative, and proposes new and revised small arms firing range danger zones for Guam nearshore training areas. In 2014, a multi-purpose range craft was deployed in Seventh Fleet that will support aerial drone, MK-30 (ASW target), and mine shape launch and recovery, deployment/recovery of the portable ASW range, and electronic warfare training (limited). Delivery of a craft to be homeported in Guam occurred in 2013. In 2012, Joint Threat Emitter (JTE) operation was approved on Guam for a site on Northwest Field, Andersen Air Force Base. JTE operation began in 2013. Other potential sites on Guam and CNMI for JTE operation are being reviewed. In 2013, new FDM targets were put in place in the inert only impact zone. Munition types in the inert only impact zone have been limited by weight to conserve targets and reduce future UXO clearance requirements. U.S. Marine Corps Pacific as the executive agent for U.S. Pacific Command is conducting a CNMI Joint Military Training EIS that proposes new U.S. Marine Corps live fire and maneuver training ranges on Tinian and Pagan. Planning for operation of these new proposed ranges alongside the existing Mariana Islands Range Complex is a future consideration.

Historical Information, Results, and Future Projections

Calendar Year	2008	2009	2010	2011	2012
Encroachment Scores	8.49	7.58	7.54	7.54	7.54

Encroachment assessments for CY2008 were different than for CY2009, 2010, and 2011. The algorithm for the overall assessment score for 2009–2011 was revised from the original algorithm used in 2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009, 2010, and 2011 provide a more accurate assessment of encroachment. The assessments for the latter three years reveal there has been little encroachment change from year to year, with relatively constant overall scores for CY2009, 2010, and 2011. The assessment score change from CY2009 to CY2010 is due to a change in EC for airspace of green in CY2009 to yellow in CY2010. The change is attributed to an increased encroachment pressure from commercial aviation regarding the use of chaff and flares in the vicinity of the air routes. Potential growth in military training activity in the Mariana Islands will be subjected to encroachment similar to what is experienced during current training. As training activities spread to the various islands, indigenous encroachment will vary depending on each island's environmental and mitigation protocols. The MIRC EIS and the Guam and CNMI Relocation EIS, both completed in 2010, are recent and comprehensive NEPA documents, addressing compliance for current and future military training and testing in the Mariana Islands. A MIRC airspace expansion plan (U.S Navy, executive agent) was completed in 2013. It is under FAA review. A Mariana Islands Training and Testing EIS is being prepared for renewal of the MMPA permit and terrestrial biological evaluations (U.S. Navy the executive agent). Other DoD NEPA actions are being planned for a divert airfield (U.S. Air Force, executive agent), and for additional land ranges in the Mariana Islands primarily in support of the U.S. Marine Corps (U.S. Marine Corps, executive agent). U.S. Navy, U.S. Air Force, and U.S. Marine Corps are coordinating agencies for future planned NEPA actions for training and testing activities being proposed for the Mariana Islands. A revised Joint Region Marianas INRMP for Guam, Farallon de Medinilla (FDM) and Tinian was completed in 2013. It is under review with the U.S. Fish and Wildlife Service. An EOD emergency open detonation area is needed on Tinian for disposal of UXO, primarily left from WWII actions. The CNMI EPA office may require a permit for a detonation area. A FDM Operational Range Clearance Plan was completed in 2013.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Mariana Islands Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strike Warfare (STW)	🟡	The land area is too small, all required ordnance is not cleared for use. The lack of land area detracts from all levels of training. The CJMT EIS is considering the Airspace Plan phases three and four, and proposals for additional ranges on other CNMI islands (Pagan and Tinian).
	Anti-Air Warfare (AAW)	🔴	There is no suitable land area available under the training airspace. This prevents realistic overland detection and tracking scenarios. A four-phase airspace plan has been proposed. NEPA for phase one has been completed with a phased conversion of ATCAAs to warning areas and creation of new overwater and overland special use airspace. FAA rulemaking for the new airspace plan, phase-one special use airspace is pending.
	Amphibious Warfare (AMW)	🔴	There is minimal land area available for AMW training. Live-fire is not permitted, maneuver is restricted to use of roads, and helicopters must land on existing airfields or designated landing zones. A four-phase airspace plan has been proposed. NEPA for phase one has been completed with a phased conversion of ATCAAs to warning areas and creation of new special use airspace. FAA rulemaking for proposed airspace plan, phase-one special use airspace is pending. CJMT EIS may consider airspace plan phases three and four with additional overland airspace for Tinian and Pagan. Navy recommends to propose a site specific Tinian amphibious landing area in the CJMT EIS or other NEPA.
	Naval Special Warfare (NSW)	🔴	There is insufficient maneuver area that supports live fire training, NSW MOUT is too small and laser designators are not allowed. This limits NSW realistic training. The range recommends conducting a study to locate land area and propose facilities that will support NSW training. There is no completion date identified.
Airspace	Strike Warfare (STW)	🟡	The size and altitudes of airspace is too small. The range cannot accommodate multiple strike packages. A four-phase airspace plan has been proposed. NEPA for phase one has been completed with a phased conversion of ATCAAs to warning areas, and creation of new overwater and overland special use airspace. FAA rulemaking for new airspace plan phase one special use airspace is pending.
	Anti-Air Warfare (AAW)	🟡	There is no suitable land area available under the training airspace. This prevents realistic overland detection and tracking scenarios. A four-phase airspace plan has been proposed. NEPA for phase one has been completed with a phased conversion of ATCAAs to warning areas and creation of new overwater and overland special use airspace. FAA rulemaking for the new airspace plan, phase-one special use airspace is pending.
	Amphibious Warfare (AMW)	🔴	Minimal airspace exists over beaches that support AMW training. This prevents air support training for AMW. A four-phase airspace plan has been proposed. NEPA for phase one has been completed with a phased conversion of ATCAAs to warning areas, and creation of new overwater and overland special use airspace. FAA rulemaking for new airspace plan phase one special use airspace is pending.
	Naval Special Warfare (NSW)	🟡	There is no special use airspace adjacent to land that supports High Altitude High Opening (HALO) or High Altitude High Opening (HAHO) parachute training. This prevents a complete range of required parachute training. The range recommends establishing SUA in the required area. There is no completion date identified.
Seaspace	Mine Warfare (MW)	🟡	There is no designated operating area for nearshore mine laying. This prevents training to proper procedures for mining. The Navy recommends designating a geographic reference point and operating area for nearhshore mining. There is no completion date identified.
	Amphibious Warfare (AMW)	🔴	A site specific designated seaspace supported by required beach front is not available. This prevents conduct of AMW beach assault training. The range proposes a site specific Tinian amphibious landing area in the CJMT EIS or other NEPA. There is no completion date identified.
	Naval Special Warfare (NSW)	🟡	There is insufficient beachfront contiguous with sea area and coral heads prevent access to beaches from sea. NSW training is therefore limited. The range recommends conducting a study to locate an area to support required training. No completion date has been identified.
Underseaspace	Mine Warfare (MW)	🔴	There is no dedicated area for mine avoidance training. The extreme water depth and lack of variance in sea bottom is problematic. This limits mine countermeasures training. The range recommends a study on the feasibility of installing a mine training range with instrumented shapes, false targets, and mines for SWAG training. There is no completion date identified
	Naval Special Warfare (NSW)	🟡	There is insufficient beachfront contiguous with sea area and coral heads prevent access to beaches from sea. NSW training is therefore limited. The range recommends conducting a study to locate an area to support required training. No completion date has been identified

Mariana Islands Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Targets	Strike Warfare (STW)	🟡	There are no raked, structural, revetted, or moving targets; targets do not support cluster munitions; targets do not support multiple strike packages; and targets do not have spectral signature. This limits live fire and realistic training. The range recommends conducting a feasibility study to establish a high fidelity, inert, air-to-ground range and training area. There is no completion date identified. A four-phase airspace plan has been proposed. NEPA for phase one has been completed with a phased conversion of ATCAAs to warning areas, and creation of new overwater and overland SUA. FAA rulemaking for new airspace plan phase one special use airspace is pending.
	Electronic Combat (EC)	🔴	There are several land and mobile EW sites and emitters (e.g. HARM emitter) although none are available for live targeting. A full range of EC training that requires target support is not available. There are no EW emitters on FDM supporting the live, inert, and NSFS target positions. The number, locations, and type of emitters available in MIRC are not adequate to represent a complex targeting environment. The Navy recommends a feasibility study for establishing a target unit at the range complex. There is no completion date identified.
	Anti-Air Warfare (AAW)	🔴	MIRC has no locally available AAW target systems; however, regional air target services and contract opposing air services are sometimes available and may be requested. A full range of AAW training that requires target support is not available. The Navy recommends a feasibility study for establishing a target unit at the range complex. There is no completion date identified.
	Anti-Surface Warfare (ASUW)	🟡	There is limited surface target support available for training at MIRC. A full range of ASUW training that requires target support is not available. The Navy recommends a feasibility study for establishing a target unit at the range complex. There is no completion date identified.
	Mine Warfare (MW)	🟡	There are no targets available from the range; users sometimes supply their own targets. This may degrade future training capability requirements (e.g. Littoral Combat Ship) for organic mine countermeasures systems (OMCM) units deployed regionally. The Navy recommends a feasibility study for installing a mine range with instrumented mines, false targets, and mines for Shock Wave Action Generator training.
	Amphibious Warfare (AMW)	🔴	No targets exist for AMW FIREX training. There are no co-located live fire areas or amphibious landing areas. This prevents live fire training associated with AMW training. The Navy recommends integrating Navy AMW target requirements into a Marine Corps amphibious feasibility study. There is no completion date identified..
	Naval Special Warfare (NSW)	🔴	No targets exist for NSW training and the MOUT facility is limited. This reduces live fire proficiency and inhibits new tactics. The Navy recommends a feasibility study for establishing a targets division at range complex. There is no completion date identified.
Threats	Strike Warfare (STW)	🔴	There is no OPFOR or EC threat simulation available at the range for STW. A full range of STW training that requires OPFOR support is not available. The Navy recommends a feasibility study for establishing OPFOR resources at the range complex. No completion date has been identified.
	Anti-Air Warfare (AAW)	🔴	EC threat stimulation (Joint Threat Emitter) is available on Guam at the Milky Way Site. A full range of EC training that requires OPFOR support is not available. Contract air support services are available regionally (with DRFM) but must have sufficient priority to provide support and is not available locally for routine training. The Navy recommends a feasibility study for establishing OPFOR resources at the range complex. No completion date has been identified.
	Anti-Surface Warfare (ASUW)	🟡	Same as above.
	Mine Warfare (MW)	🟡	Same as above.
	Amphibious Warfare (AMW)	🔴	Same as above.
	Anti-Submarine (ASW)	🔴	Same as above.
	Naval Special Warfare (NSW)	🟡	Mobile EW threat emitters are available, but a full range of EC training that requires OPFOR support is not available. The Navy recommends a feasibility study for establishing OPFOR resources at the range complex. No completion date has been identified..

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Mariana Islands Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Scoring & Feedback	Strike Warfare (STW)	🔴	No instrumentation exists at the range and a full range of training that requires instrumentation is not available. The Navy recommends a feasibility study for providing instrumentation to the range complex. No completion date has been identified.
	Electronic Combat (EC)	🔴	Same as above.
	Anti-Air Warfare (AAW)	🔴	Same as above.
	Anti-Surface Warfare (ASUW)	🔴	Same as above.
	Mine Warfare (MW)	🔴	Same as above.
	Amphibious Warfare (AMW)	🔴	Same as above.
	Anti-Submarine (ASW)	🟡	No instrumentation exists at the range and PUTR is available for temporary deployment to Guam. Range support craft that will support PUTR, MK-30, and EXTORP was delivered in 2013.
	Naval Special Warfare (NSW)	🔴	No instrumentation exists at the range and a full range of training that requires instrumentation is not available. The Navy recommends a feasibility study for providing instrumentation to the range complex. No completion date has been identified.
Range Support	Strike Warfare (STW)	🟡	PACFLT is developing a DCAST that includes a post-event module to mitigate issues outlined above. DCAST has been deployed and development is in progress. MIRC is an uncontrolled range where range users are responsible for clearing ranges and safe conduct of all activity. Navy recommends to establish a FACSFAC on Guam with communications, networking, and radar coverage for the Marianas operating areas. UAS operations are limited by airspace restrictions and track integration with fleet training events. The Navy recommends coordinating with the FAA to identify UAS requirements over the entire MIRC to facilitate safe, tactically significant UAS operations.
	Electronic Combat (EC)	🟡	Same as above.
	Anti-Air Warfare (AAW)	🟡	Same as above.
	Anti-Surface Warfare (ASUW)	🟡	Same as above.
	Mine Warfare (MW)	🟡	Same as above.
	Amphibious Warfare (AMW)	🟡	Same as above.
	Anti-Submarine (ASW)	🟡	Same as above.
	Naval Special Warfare (NSW)	🟡	Same as above.

Mariana Islands Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Strike Warfare (STW)	🟡	Threatened species and migratory bird habitat restricts area available for training on Farallon de Medinilla (FDM). Restrictions create avoidance areas, prohibit certain training events, reduce range access, segment training/reduce realism, complicate night and all-weather training, and raise flight altitudes. The Navy complies with current regulations, attempts to negotiate a reduction in the number of restrictions throughout the complex, and designates alternate locations for STW that do not have such restrictions.
	Amphibious Warfare (AMW)	🔴	The MMPA, ESA (e.g. the USDA Brown Tree Snake (BTS) protocol) and the EIS for Military Training in the Marianas place restrictions on military training throughout the Marianas. Regulatory controls have resulted in INRMPs that place restrictions on military operations. Coral and essential fish habitat (EFH) conservation, marine mammal protection, turtle nesting, and BTS protocols are some of the encroachment issues that influence training activities. Landing Craft Air Cushion (LCAC) and Amphibious Assault Vehicle (AAV) landings on the beaches in the Marianas are problematic. Amphibious landings will require compensatory coral reef mitigation efforts. Species restrictions create avoidance areas, prohibit certain training events, reduce range access, segment training/reduce realism, raise flight altitudes, complicate night and all-weather training, and raise flight altitudes. All Military Services are subject to and conform to training restrictions (e.g. BTS protocols, turtle nest avoidance, avoidance of habitat areas of concern for protected species such as the Marianas crow and fruit bat that have not been designated as critical habitat). The Navy should attempt to negotiate a reduction in the number of restrictions throughout the complex. No action currently scheduled.
	Naval Special Warfare (NSW)	🟡	The MMPA, ESA (e.g. the BTS protocol) and the EIS for Military Training in the Marianas place restrictions on military training throughout the Marianas. Regulatory controls have resulted in INRMPs that place restrictions on military training. Restrictions create avoidance areas, prohibit certain training events, reduce range access, segment training/reduce realism. The Navy continues to pursue regulatory relief while adhering to compliance provisions.
Munitions Restrictions	Strike Warfare (STW)	🟡	De-vegetation and erosion on FDM caused by explosive munitions has restricted and prohibited certain munitions expenditures. FDM restrictions create avoidance areas and prohibit certain training events. FDM users are continually reminded to use only authorized munitions and to keep munitions on island. All Military Services are subject to and conform to training restrictions.
	Naval Special Warfare (NSW)	🟡	EOD permitting in the Ordnance Annex and UXO on the inactive mortar range and live coral beds on Tinian are issues that restrict EOD and training activity. Restrictions prohibit certain training events. The Navy is evaluating alternatives that will allow EOD appropriate training venue.
Spectrum	Strike Warfare (STW)	🟡	Employment of Link 16 is restricted. Restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief and to develop encroachment strategies that will reduce encroachment while ensuring pending use of emerging spectrum technologies. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations.
	Anti-Air Warfare (AAW)	🟡	Same as above.
	Anti-Surface Warfare (ASUW)	🟡	Employment of Link 16, SPY-1 radar, SPS 49 radar, and IFF are restricted. Restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief and to develop encroachment strategies that will reduce encroachment while ensuring pending use of emerging spectrum technologies. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations.
	Mine Warfare (MW)	🟡	Same as above.
	Amphibious Warfare (AMW)	🟡	Same as above.
	Anti-Submarine (ASW)	🟡	Same as above.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Mariana Islands Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Maritime Sustainability	Anti-Surface Warfare (ASUW)	●	Maritime protective and mitigation measures undertaken in compliance with regulatory requirements have resulted in training restrictions that reduce training flexibility and ultimately reduce training realism. All at-sea training is impacted to some degree; impacts are most significant to integrated warfare training using active underwater acoustic sources. The Navy and National Marine Fisheries Service (NMFS) have developed science based protective and mitigation measures that adequately protect marine species while accommodating military readiness activities. The Navy continues to develop Environmental Impact Statements and obtain permits and authorizations for its range complexes to ensure military training complies with applicable laws and regulations. Litigation risks remain a concern, entailing the potential to delay or further restrict training, despite the protective and mitigation measures applied by the Navy in compliance with the MMPA and the ESA. Endangered species/ critical habitat encroachment from the North Atlantic right whale has created avoidance areas that have resulted in some reduction of training days and prohibits certain training events. This area is relatively small in scope, however, if these types of restrictions were applied to other species/areas, there would be significant impacts to readiness through reduction in range access, segmentation of training/reduction in realism, limits on the application of new technologies, raised flight altitudes, reduced live fire proficiency, increased personnel tempo, and increased O&M costs. The Navy will continue to invest in marine mammal research; rely on scientifically valid empirical data results as basis of marine mammal mitigation development; factor mitigation effectiveness into permit requests and continue education of Fleet units to adhere to the maritime protective and mitigation measures and public education outreach efforts. Navy's authorizations under the MMPA and ESA include an adaptive management approach that includes continually evaluating existing mitigation measures for their potential impacts on training. If impacts on training from mitigation measures are identified and documented, Navy will raise these impacts with NMFS for resolution during an annual adaptive management review process.
	Mine Warfare (MW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.
Airspace	Strike Warfare (STW)	●	Marianas airspace is adequate when the ATCAAs are available; however, scheduling can be problematic as FAA is not always flexible to short notice requests. FAA in Marianas has tremendous pressure from the airlines. Warfare areas participating in combined arms training are impacted by the current lack of SUA over land areas in the Marianas. Encroachment from airspace restrictions creates avoidance areas, prohibits certain training events, reduces range access, segments training/reduces realism, inhibits new tactics development. The Navy is considering establishing Warning Areas to replace the ATCAAs. For possible range complex upgrades with live-fire ranges, there will be a requirement for additional special use airspace (SUA), including Restricted Airspace, over the live-fire ranges.
	Electronic Combat (EC)	●	FAA restrictions on EC/chaff operations in proximity to air routes is problematic. EC/chaff restrictions creates avoidance areas, prohibits certain training events, segments training/reduces realism, inhibits new tactics development, and limits application of new technologies. The Navy is negotiating with the FAA for relief; no pending resolution date.
	Anti-Air Warfare (AAW)	●	Marianas airspace is adequate when the ATCAAs are available; however, scheduling can be problematic as FAA is not always flexible to short notice requests. FAA in Marianas has tremendous pressure from the airlines. Warfare areas participating in combined arms training are impacted by the current lack of SUA over land areas in the Marianas. Encroachment from airspace restrictions creates avoidance areas, prohibits certain training events, reduces range access, segments training/reduces realism, inhibits new tactics development. The Navy is considering establishing Warning Areas to replace the ATCAAs. For possible range complex upgrades with live-fire ranges, there will be a requirement for additional SUA, including restricted airspace, over the live-fire ranges

Mariana Islands Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Noise Restrictions	Strike Warfare (STW)	●	There is a continuing concern with noise at Andersen Northwest Field due to residential areas adjoining the property. Nighttime flying activities are restricted and flight tracks are routed to avoid populated areas. Only mission essential aircraft arrivals and departures are scheduled between 2200 and 0600 hours. Noise related restrictions prohibit certain training events and complicate night training. The Air Force continues close coordination with local stakeholders to ensure military operations can proceed normally.
	Anti-Air Warfare (AAW)	●	Same as above.
Adjacent Land Use	Strike Warfare (STW)	●	There is privately owned land near the runway at Andersen Air Field Northwest that falls within the clear zones for aircraft operations. Nighttime flying activities are restricted and flight tracks are routed to avoid populated areas. Only mission essential aircraft arrivals and departures are scheduled between 2200 and 0600 hours. Private owners are a source for noise complaints. Noise related restrictions prohibit certain training event and complicate night training. The Air Force continues close coordination with local stakeholders to ensure military operations can proceed normally.
	Anti-Air Warfare (AAW)	●	Same as above.
Cultural Resources	Amphibious Warfare (AMW)	●	When an LCAC lands at Chulu Beach, Tinian, standard operating procedure requires that it remains on full air cushion until the entire craft is on the beach. LCAC full cushion operations on Chulu Beach are problematic as the beachfront is narrow and shallow. LCAC training restrictions create avoidance areas and prohibit certain training events. Site specific analysis for amphibious landings on Tinian may be analyzed in the CNMI Joint Military Training (CJMT) EIS.
	Naval Special Warfare (NSW)	●	The pervasiveness of cultural resources in the Marianas limits locations for NSW ranges and training areas where special operations forces would logically train. Restrictions create avoidance areas, prohibit certain training events, reduce range access, and segment training/reduce realism. There is no known remedy.
Wetlands	Amphibious Warfare (AMW)	●	There are sensitive wetlands areas in the vicinity of the Reserve Craft Beach (RCB). The Government of Guam has declared the area a conservation area. The Navy owns the RCB, but the Government of Guam has restricted its use. Restrictions over wetlands reduce range access, create avoidance areas, segment training and/or reduce realism, and raise flight altitudes. The Navy, through the Regional Encroachment Working Group may try to negotiate with the Government of Guam to lessen the impacts of RCB restrictions.
	Naval Special Warfare (NSW)	●	Same as above.
Range Transients	Strike Warfare (STW)	●	Commercial and private fishing boats and dive boats frequent near-shore areas throughout the Marianas. Transient boat traffic interrupts or stops military training activity. Training interruptions reduce range access, create avoidance areas, segment training and/reduce realism, and prohibit certain training events. The Navy pursues outreach, through the Regional Encroachment Working Group, to local mayors, fishermen, and tour operators to ensure better understanding of military training. The Navy is pursuing the establishment of a danger zone around FDM for safety reasons.
	Mine Warfare (MW)	●	Commercial and private fishing boats and dive boats frequent near-shore areas throughout the Marianas. There are no enforced SDZs over the water. Transient boat traffic interrupts or stops military training activity. Transient boat activity reduces range access, creates avoidance areas, segments training and/or reduces realism, and prohibits certain training events. Active patrolling of near-shore areas may need to be implemented to avoid civilian encroachment onto hot ranges and training areas. The Navy pursues outreach through the Regional Encroachment Working Group to local mayors, fishermen, and tour operators to ensure better understanding of military training.
	Amphibious Warfare (AMW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Narragansett Assessment Details

Range Mission Description

The Narragansett Bay Range Complex's mission is to support Antisubmarine Warfare (ASW) through its surface, subsurface and special use airspace operating area. Note: Encroachment Action Plan coverage for this complex is included in the VACAPES/Northeast/Chesapeake Bay Offshore EAP scheduled for completion in Spring 2015.

Capability Data

Mission Areas	Capability Attributes												
	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
Strike Warfare													
Electronic Combat													
Anti-Air Warfare													
Anti-Surface Warfare													
Mine Warfare													
Amphibious Warfare													
Anti-Submarine		FMC	FMC	FMC	FMC	PMC	PMC		PMC				
Naval Special Warfare													
Expeditionary Warfare													

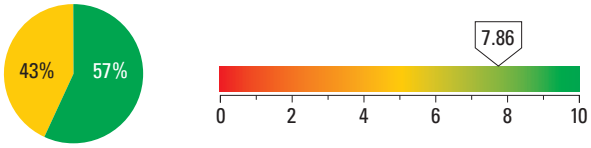
Legend: FMC, PMC, NMC

Encroachment Data

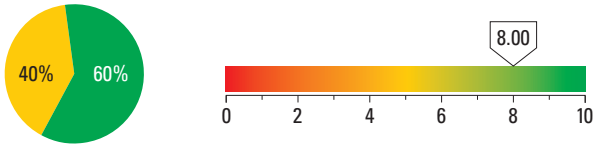
Mission Areas	Encroachment Factors											
	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Strike Warfare												
Electronic Combat												
Anti-Air Warfare												
Anti-Surface Warfare												
Mine Warfare												
Amphibious Warfare												
Anti-Submarine			Moderate	Moderate	Moderate				Minimal			Minimal
Naval Special Warfare												
Expeditionary Warfare												

Legend: Minimal, Moderate, Severe

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

The capability attribute most impacting range mission performance is Scoring & Feedback System. The mission area most severely impacted is ASW. There is no immediate projected change.

Summary Observations

Spectrum and Maritime Sustainability are the two encroachment factors having the most impact on training. ASW is the only mission area impacted by encroachment. ASW forces have developed training procedures, maritime mitigation measures, and workarounds that cope with the pressures of encroachment on ASW training.

Narragansett Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	7.14	7.86	7.86	7.86	7.86	**Encroachment Scores**	8.75	8.00	8.00	8.00	8.00
ASW Scoring & Feedback was Red in CY2008 and re-evaluated to Yellow in CY2009.						Encroachment assessments for CY2008 were different than for CY2009–2012. The algorithm for the overall assessment score for 2009–2012 was revised from the original algorithm used in 2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009–2012 provide a more accurate assessment of encroachment. The assessments for the latter years reveal there has been little encroachment change from year to year, with relatively constant overall scores through to 2012. The VACAPES-Northeast RCMP update is complete. DOI and private energy interests in the OCS are increasing as domestic energy demand builds. Naval offshore operating areas and training events may be affected. High priority areas include training ranges and seaspace in and adjacent to all Navy OPAREAs. The Navy and OSD continue to work closely with the Fleets and BOEM to resolve issues of combined use of the OCS important to both agencies. Fleet review and analysis of impacts from both oil/gas and wind energy "lease sale" areas (Mission Critical Areas-MCAs) have been reviewed and forwarded to OSD. DoD and DOI coordination continues. Narragansett Bay had no emerging encroachment issues during 2014 that affect Narragansett Bay operations. The 2014 encroachment assessment data remain the same as 2012.					

Narragansett Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Threats	Anti-Submarine (ASW)	●	There are limited dedicated live submarines, surface ships, or aircraft to serve in the OPFOR role. This shortfall prohibits certain training events; reduces realism; inhibits tactics; increases personnel optempo; and increases O&M costs. The Navy will invest in additional threat OPFOR and increase availability of submarines through the Diesel Electric Submarine Initiative (DESI) and aircraft through the Contract Air Support (CAS) programs. No completion date identified.
Scoring & Feedback Systems	Anti-Submarine (ASW)	●	There is no underwater tracking range, scoring capability, M&S, or post mission feedback. This prohibits certain training events; reduces realism; limits weapon technologies; inhibits tactics; reduces live fire proficiency; increases personnel optempo; and increases O&M costs. The Navy plans to expand and improve 2-D and 3-D coverage of the OPAREA; invest in JNTC compliant M&S; and improve debrief capabilities. An East Coast USWTR is planned for the Jacksonville Range Complex - planned for FY2017. No completion date identified for other plans.
Range Support	Anti-Submarine (ASW)	●	A lack of a web-based scheduling system with pre-event, real-time, and post-event modules precludes most efficient scheduling and documenting of range usage. Post-event reporting is particularly critical for ordnance expenditures or active sonar usage in at-sea OPAREAs since MMPA permits require Navy to periodically report these values. Non-compliance or inaccurately reporting post-event values to regulators risks range access or prohibitions on training events that involve active sonar or high explosives at-sea. OPNAV N98 has determined that the DCAST system will be the SUA scheduling tool for all Fleet Area Control and Surveillance Facilities and all other Air Traffic Control facilities with SUA reporting requirements. DCAST system programmers are conducting site visits to the FACSFACs to gather operating area and airspace data to develop DCAST for each location.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Narragansett Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Spectrum	Anti-Submarine (ASW)	●	Employment of Link 16, SPY-1 radar, and IFF are restricted. Restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief and to develop encroachment strategies that will reduce encroachment while ensuring pending use of emerging spectrum technologies. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations.
Maritime Sustainability	Anti-Submarine (ASW)	●	Maritime protective and mitigation measures undertaken in compliance with regulatory requirements have resulted in training restrictions that reduce training flexibility and ultimately reduce training realism. All at-sea training is impacted to some degree; impacts are most significant to integrated warfare training using active underwater acoustic sources. The Navy and NMFS have developed science-based protective and mitigation measures that adequately protect marine species while accommodating military readiness activities. The Navy continues to develop Environmental Impact Statements and obtain permits and authorizations for its range complexes to ensure military training complies with applicable laws and regulations. Litigation risks remain a concern, entailing the potential to delay or further restrict training, despite the protective and mitigation measures applied by the Navy in compliance with the MMPA and the ESA. Endangered species/critical habitat encroachment from the North Atlantic Right Whale has created avoidance areas that have resulted in some reduction of training days and prohibits certain training events. This area is relatively small in scope. However, if these types of restrictions were applied to other species/areas, there would be significant impacts to readiness through reduction in range access, segmentation of training/reduction in realism, limits on the application of new technologies, raised flight altitudes, reduced live fire proficiency, increased personnel tempo, and increased O&M costs. The Navy will continue to invest in marine mammal research and rely on scientifically valid empirical data results as basis of marine mammal mitigation development. The Navy will factor mitigation effectiveness into permit requests and continue the education of Fleet units to ensure adherence to the maritime protective and mitigation measures and public education outreach efforts. Navy's authorizations under the MMPA and ESA include an adaptive management approach that includes continually evaluating existing mitigation measures for their potential impacts on training. If impacts on training from mitigation measures are identified and documented, Navy will raise these impacts with NMFS for resolution during an annual adaptive management review process.

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Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Navy Cherry Point Assessment Details

Range Mission Description

The Navy Cherry Point Range Complex supports training across all Navy mission areas except Naval Special Warfare. It has the only East Coast Electronic Combat (EC) training facility.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strike Warfare	PMC	PMC	FMC	FMC	PMC	PMC	PMC		PMC				
Electronic Combat	FMC	FMC	FMC	FMC	PMC	PMC	FMC		PMC				
Anti-Air Warfare	PMC	FMC	FMC		FMC	PMC	PMC		PMC				
Anti-Surface Warfare		FMC	FMC	FMC	FMC	FMC	PMC		PMC				
Mine Warfare		FMC	FMC	FMC	PMC	FMC			PMC				
Amphibious Warfare	FMC	FMC	FMC	FMC	PMC	PMC	FMC		PMC				
Anti-Submarine		FMC	FMC	FMC	FMC	PMC	NMC		PMC				
Naval Special Warfare													
Expeditionary Warfare	FMC	FMC	FMC						PMC				

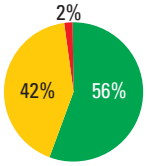
Legend: FMC, PMC, NMC

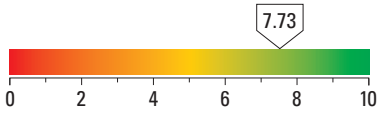
Encroachment Data

Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strike Warfare		FMC	PMC	FMC	PMC		FMC		FMC			FMC
Electronic Combat			PMC		FMC		FMC					FMC
Anti-Air Warfare			PMC		FMC		FMC					FMC
Anti-Surface Warfare			PMC	PMC	FMC				FMC			PMC
Mine Warfare			FMC	FMC	FMC				FMC			FMC
Amphibious Warfare			PMC	PMC	FMC		FMC		FMC			PMC
Anti-Submarine			FMC	FMC	FMC				FMC			PMC
Naval Special Warfare												
Expeditionary Warfare				PMC								PMC

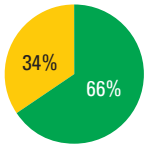
Legend: Minimal, Moderate, Severe

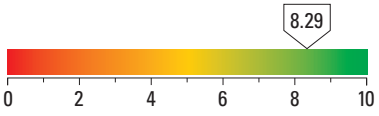
Capability Chart and Scores





Encroachment Chart and Scores





Summary Observations

The capability attribute most impacting range mission performance was Scoring & Feedback Systems. The mission areas most severely impacted were ASW and MW. No immediate change is projected.

Summary Observations

Spectrum and Maritime Sustainability are the two encroachment factors having the greatest impact on training.ASUW and AMW are the two mission areas with the greatest encroachment impacts.The Navy has developed procedures, maritime mitigation measures, and workarounds to accommodate encroachment impacts. The Navy continues to consult and discuss with stakeholders various strategies that can lessen encroachment impacts.

Navy Cherry Point Assessment Details

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Capability Scores	7.40	7.50	7.50	7.65	7.65

The airspace training requirement for STW was re-evaluated between the 2008 report and 2009. The revised impact assessment from Red to Yellow was based on review of similar impacts at Jacksonville and VACAPES range complexes in order to achieve a consistent evaluation between ranges. MW Scoring & Feedback changed from Red to White based on USFF evaluation that TSPI Scoring data is not required.

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Encroachment Scores	8.29	8.33	8.33	8.47	8.47

Encroachment assessments for CY2008 were different than for CY2009–2012. The algorithm for the overall assessment score for 2009–2012 was revised from the original algorithm used in 2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009–2012 provide a more accurate assessment of encroachment. The assessments for the latter years reveal there has been little encroachment change from year to year, with relatively constant overall scores through to 2012, except EC Spectrum prohibits use of some threat simulation equipment. ASUW & AMW maritime sustainability re-evaluated from Red to Yellow based on affect on range capabilities. The Cherry Point RCMP update is complete and the Cherry Point OPAREA EAP is complete. DOI and private energy interests, to include foreign investment and acquisition in the vicinity of the OCS, are increasing as domestic energy demand builds. Naval offshore operating areas and training events may be affected. High priority areas include training ranges and sea space in and adjacent to all Navy OPAREAs. The Navy and OSD continue to work closely with the Fleets and BOEM to resolve issues of combined use of the OCS important to both agencies. Fleet review and analysis of impacts from both oil/gas and wind energy "lease sale" areas (Mission Critical Areas-MCAs) have been reviewed and forwarded to OSD. DoD and DOI coordination continues. Cherry Point had no emerging encroachment issues during 2014 that affect training operations.

Navy Cherry Point Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strike Warfare (STW)	●	There is no land in the Navy Cherry Point range. Land area in contiguous Marine Corps ranges provides some land space and contains two targets, but the land size does not meet minimum requirements. Additional land space is only available at Dare County Bombing Range. The land area does not fully support size or topography requirements for placement of required number of targets. Use of live ordnance is not supported. The area is too small to support standoff PGM weapons. These shortfalls prohibit certain training events, reduce realism, reduce life fire proficiency. There are no local options for increasing land availability.
	Anti-Air Warfare (AAW)	●	Landspace is only available at adjacent Marine Corps ranges and at the Dare County Bombing Range, which does not fully support size or topography requirements, or support surface combatant detection of aircraft over land. Use of flares is restricted. This prohibits certain training events, reduces realism, and increases personnel optempo. Overland ACM training is conducted at Fallon Range Training Complex. No additional land options are available.
Airspace	Strike Warfare (STW)	●	There is no landspace available on the Navy Cherry Point range. Land area in contiguous Marine Corps ranges provide some land space, but the airspace configuration lacks characteristics for realistic tactical approaches and does not support the area size needed to meet minimum training requirements. Altitudes are limited to 17,999 ft and the area is not cleared for supersonic operations. This reduces realism, inhibits new tactics development, and reduces live fire proficiency. There are no local options for increasing land availability, but coordination and investment in new MOAs could reduce the impact on flight operations by increasing airspace area and altitudes.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Navy Cherry Point Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Targets	Strike Warfare (STW)	●	No targets are available in the range. Two targets are moderately supported by contiguous USMC ranges, but do not allow live ordnance. This reduces realism, prohibits certain events, increases personnel optempo, and increases O&M costs. Improvements are expected due to recent investment planning for targets, but additional investment in moving and urban targets located in a land area that will support STW is required. No completion date has been identified.
	Electronic Combat (EC)	●	There is no EC support above level 2 for aircraft and no support for surface units. Contiguous USMC ranges provide some support, but lack mobile targets, and lack sufficient threat emitters to cover range of threats. This prohibits certain training events, and reduces realism. The Navy plans to invest in upgrades to MAEWR to cover range of required threats and targets. No completion date has been identified.
	Mine Warfare (MW)	●	There are insufficient training mines to support increased MW training requirements from MH-60 and MH-53 helicopter squadrons. This prohibits certain training events, reduces realism, inhibits tactics, increases personnel optempo, and increases O&M costs. The Navy will procure appropriate mix of recoverable and expendable inert bottom and moored mine shapes and instrumented bottom training mines to populate a temporary mine training area for major exercises. No completion date has been identified.
	Amphibious Warfare (AMW)	●	Portable beach obstacles are available, but are not cleared for engagement/destruction. This reduces realism for assault training, and prohibits certain training events, such as obstacle clearance. The Navy recommends investing in beach obstacles that will fully support training requirements. No completion date has been identified.
Threats	Strike Warfare (STW)	●	An additional amount of live or virtual fixed winged or helicopter OPFOR is required for realistic threat representation. This reduces realism; and prohibits certain events. The Navy plans to invest in additional Commercial Air Services (CAS) to serve as OPFOR. No completion date has been identified.
	Electronic Combat (EC)	●	EC threat representation does not fully support EC threat levels 3 or 4 for required mission areas. Existing instrumentation systems are becoming obsolete and unsupportable through the FYDP. This reduces realism, inhibits tactics development, and greatly increases O&M costs. The Navy plans to maintain current upgrade schedule to preclude severe degradation of system capability. No completion date has been identified.
	Anti-Air Warfare (AAW)	●	Helicopter and supersonic threat OPFOR and required quantity of threat OPFOR is not available. This shortfall reduces realism, inhibits new tactics development, increases personnel optempo, and increases O&M costs. The Navy plans to invest in additional CAS to serve as OPFOR. No completion date has been identified.
	Amphibious Warfare (AMW)	●	There is no dedicated OPFOR consisting of minefields, submarines, small high-speed boats, a battalion-sized ground force, a company-sized mechanized force and anti-ship cruise missiles available. This reduces realism and inhibits new tactics development. The Navy will provide funding to develop a dedicated threat of live, virtual, and constructive OPFOR. No completion date has been identified.
	Anti-Submarine (ASW)	●	There are limited dedicated live submarines, surface ships, or aircraft to serve in the OPFOR role. This prohibits certain training events, reduces realism, inhibits tactics, increases personnel optempo, and increases O&M costs. The Navy plans to invest in additional threat OPFOR and increase availability of submarines through the DESI and aircraft through CAS. No completion date has been identified.

Navy Cherry Point Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Scoring & Feedback System	Strike Warfare (STW)	🟡	The OPAREA lacks full TSPI and EC&C coverage, there are no M&S capabilities and the range lacks real-time kill notification. This reduces realism, prohibits certain events, increases personnel optempo, and increases O&M costs. The Navy plans to expand and improve 2-D and 3-D coverage of OPAREA, invest in JNTC compliant M&S, and improve debrief and data collection capabilities. No completion date has been identified.
	Anti-Air Warfare (AAW)	🟡	OPAREA coverage is not complete, Modeling & Simulation is inadequate, and there is no RTKN. Existing instrumentation systems are not supportable through the FYDP. This reduces realism, inhibits tactics, increases personnel optempo, and increases O&M costs. The Navy plans to expand and improve 2-D and 3-D coverage of the OPAREA, invest in JNTC compliant M&S, and improve debrief capabilities. No completion date has been identified.
	Anti-Surface Warfare (ASUW)	🟡	The range lacks full TSPI coverage, there are no M&S capabilities, and it lacks automatic scoring. This reduces realism, inhibits tactics, increases personnel optempo, and increases O&M costs. The Navy plans to expand and improve 2-D and 3-D coverage of the OPAREA, invest in JNTC compliant M&S, and improve debrief capabilities. No completion date has been identified.
	Anti-Submarine (ASW)	🔴	There is no underwater tracking range, scoring capability, M&S, or post mission feedback. This prohibits certain training events, reduces realism, limits weapon technologies, inhibits tactics, reduces live fire proficiency, increases personnel optempo, and increases O&M costs. The Navy plans to develop and fund east coast USWTR, expand and improve 2-D and 3-D coverage of the OPAREA, invest in JNTC compliant M&S, and improve debrief capabilities. East Coast USWTR is planned for FY2017; no completion date has been identified for other plans.
Range Support	Strike Warfare (STW)	🟡	A lack of a web-based scheduling system with pre-event, real-time, and post-event modules precludes most efficient scheduling and documenting of range usage. Post-event reporting is particularly critical for ordnance expenditures or active sonar usage in at-sea OPAREAs since MMPA permits require Navy to periodically report these values. Non-compliance or inaccurately reporting post-event values to regulators risks range access or prohibitions on training events that involve active sonar or high explosives at-sea. OPNAV N98 has determined that the DCAST system will be the SUA scheduling tool for all FACSFACs and all other Air Traffic Control facilities with SUA reporting requirements. DCAST system programmers are conducting site visits to the FACSFACs to gather operating area and airspace data to develop DCAST for each location
	Electronic Combat (EC)	🟡	Same as above.
	Anti-Air Warfare (AAW)	🟡	Same as above.
	Anti-Surface Warfare (ASUW)	🟡	Same as above.
	Mine Warfare (MW)	🟡	Same as above.
	Amphibious Warfare (AMW)	🟡	Same as above.
	Anti-Submarine (ASW)	🟡	Same as above.
	Expeditionary Warfare(EXW)	🟡	Same as above.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Navy Cherry Point Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Spectrum	Strike Warfare (STW)	●	Employment of Link 16, SPY-1 radar, SPS 49 radar, and IFF are restricted. Restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief and to develop encroachment strategies that will reduce encroachment while ensuring pending use of emerging spectrum technologies. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations.
	Electronic Combat	●	Same as above.
	Anti-Air Warfare	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.
Maritime Sustainability	Anti-Surface Warfare (ASUW)	●	Maritime protective and mitigation measures undertaken in compliance with regulatory requirements have resulted in training restrictions that reduce training flexibility and ultimately reduce training realism. All at-sea training is impacted to some degree; impacts are most significant to integrated warfare training using active underwater acoustic sources. The Navy and National Marine Fisheries Service (NMFS) have developed science based protective and mitigation measures that adequately protect marine species while accommodating military readiness activities. The Navy continues to develop Environmental Impact Statements and obtain permits and authorizations for its range complexes to ensure military training complies with applicable laws and regulations. Litigation risks remain a concern, entailing the potential to delay or further restrict training, despite the protective and mitigation measures applied by the Navy in compliance with the MMPA and the ESA. Endangered species/critical habitat encroachment from the North Atlantic right whale has created avoidance areas that have resulted in some reduction of training days and prohibits certain training events. This area is relatively small in scope, however, if these types of restrictions were applied to other species/areas, there would be significant impacts to readiness through reduction in range access, segmentation of training/reduction in realism, limits on the application of new technologies, raised flight altitudes, reduced live fire proficiency, increased personnel tempo, and increased O&M costs. The Navy will continue to invest in marine mammal research; rely on scientifically valid empirical data results as basis of marine mammal mitigation development; factor mitigation effectiveness into permit requests and continue education of Fleet units to adhere to the maritime protective and mitigation measures and public education outreach efforts. Navy's authorizations under the MMPA and ESA include an adaptive management approach that includes continually evaluating existing mitigation measures for their potential impacts on training. If impacts on training from mitigation measures are identified and documented, Navy will raise these impacts with NMFS for resolution during an annual adaptive management review process.
	Amphibious Warfare (AMW)	●	Same as above.
	Expeditionary Warfare(EXW)	●	Same as above.

Navy Cherry Point Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Airspace	Strike Warfare (STW)	●	FACSFAC and FAA communications and flight procedures in controlled airspace between W-122 and R-5306A/ C/D/E (the Navy Cherry Point Range Complex to BT-9, BT-11 and G-10 impact areas) interrupt the flow of tactical flight operations from W-122 to the R-5306 airspace. Airspace restrictions-based encroachment segments training/reduces realism. FACSFAC VACAPES, MCAS CP, MCB CL continue to coordinate with each other and the FAA Washington Center to refine airspace procedures and alleviate airspace flight restrictions that provide better tactical aircraft movement from W-122 to the R-5306.
Range Transients	Anti-Surface Warfare (ASUW)	●	Range transients, involving commercial shipping, commercial fishing, and private pleasure boating encroach on training, either by delaying events or forcing relocation to less than optimum locations. Commercial vessel and recreational vessel encroachment create avoidance areas and segments training/ reduces realism. This impacts operations and test at Navy Shipboard Electronic Systems Evaluation Facility (SESEF) offshore from Virginia Capes. The Navy will continue to pursue opportunities to inform industry and the public of the impact of range transient encroachment on at sea OPAREAS and Navy readiness.
	Amphibious Warfare (AMW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.
	Expeditionary Warfare(EXW)	●	Same as above.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

NOCAL Assessment Details

Range Mission Description

The Northern California (NOCAL) Range Complex mission is to support Navy training in Strike Warfare (STW), Anti-Air Warfare (AAW), Anti-surface Warfare (ASUW), and Naval Special Warfare (NSW).

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strike Warfare	●	●	●	●	●	●	●		●				
Electronic Combat													
Anti-Air Warfare	●	●	●		●	●	●		●				
Anti-Surface Warfare		●	●	●	●	●	●		●				
Mine Warfare													
Amphibious Warfare													
Anti-Submarine													
Naval Special Warfare	●	●	●	●	●	●	●		●				
Expeditionary Warfare	●	●	●	●	●	●	●		●				

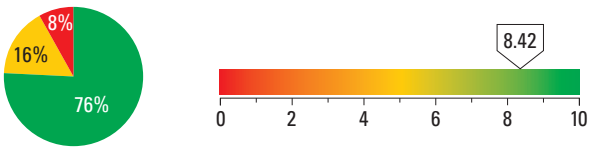
Legend: FMC ● PMC ● NMC ●

Encroachment Data

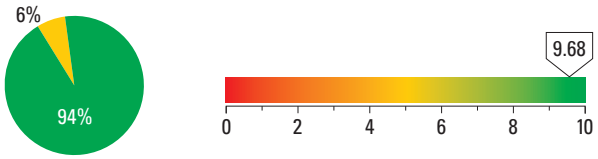
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strike Warfare			●	●	●	●	●		●			●
Electronic Combat												
Anti-Air Warfare			●		●	●	●					●
Anti-Surface Warfare			●	●	●				●			●
Mine Warfare												
Amphibious Warfare												
Anti-Submarine												
Naval Special Warfare			●	●	●	●	●		●			●
Expeditionary Warfare			●	●	●	●	●		●			●

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

The capability attribute most impacting range mission performance is Targets and Scoring & Feedback systems. The mission area most severely impacted is STW. Range Support changed from Yellow to Green as PACFLT has developed a DCAST, a web-enabled took that includes: customizable scheduling, event deconfliction, range map graphics generation, schedule notification and automatic reports generation. The tool is an OPNAV (N433) program of record that has an authority to operate within the Defense Information Systems Agency (DISA) Cloud

Summary Observations

Range Transients is the encroachment factor with the greatest impact on training. STW and AAW are the mission areas most affected. Encroachment issues at Fort Hunter Liggett and Camp Roberts are all Army/National Guard action items (cultural resources, range transients, threatened and endangered species, and airborne noise at FHL).

NOCAL Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	7.33	7.33	7.33	7.33	7.83	**Encroachment Scores**	9.58	9.58	9.58	9.58	9.58
The capability assessment has been stable from year to year, with relatively constant overall scores for CY2010 and 2011. Capability increases for 2012 beyond are primarily a reflection of the establishment of the Naval Expeditionary Combat Command and the designation of Expeditionary Warfare (EXW) as a primary warfare areas. EXW and NSW training in NOCAL is increasing.						Encroachment assessments for CY2008 were different than those for CY2009, 2010, and 2011. The algorithm for the overall assessment score for 2009–2011 was revised from the original algorithm used in 2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009, 2010, and 2011 provide a more accurate assessment of encroachment. The assessments for the latter three years reveal there has been little encroachment change from year to year, with relatively constant overall scores for CY2009, 2010, and 2011. There is little indication encroachment pressures will change in the foreseeable future.					

NOCAL Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strike Warfare (STW)	🔴	There is no Navy owned landspace. Army Fort Hunter-Liggett provides support for limited helicopter training, but their support for Fleet Replacement Squadron (FRS) and Fleet F/A-18 squadron strike training capability is severely limited. These units must rely on out-of-area training to fulfill basic level requirements. This prohibits training events, complicates night and all-weather training, reduces realism, limits tactics, reduces live fire proficiency, increases personnel optempo, and increases O&M costs. The Navy recommends development of an instrumented air-to-ground range in the NOCAL training area and investigating other feasible range areas. There is no completion date identified.
Airspace	Strike Warfare (STW)	🔴	Same as above, as airspace must be associated with landspace requirements.
Targets	Strike Warfare (STW)	🔴	Only one target site exists and there are no DMPIs or raked targets. This prohibits certain training, reduces realism, limits application of new technologies, inhibits some tactics, reduces live fire proficiency, increases personnel optempo, and increases O&M costs. Recommend investigating other feasible range areas to support this training. No completion date identified.
Threats	Strike Warfare (STW)	🟡	There is no helicopter OPFOR available; commercial OPFOR is extremely limited; there is no supersonic OPFOR; and EC OPFOR is extremely limited. These shortfalls reduce realism; inhibits tactics; increase personnel optempo; and increase O&M costs. The Navy recommends increasing funding for commercial OPFOR and providing additional target vessel services to support air and EC OPFOR. There is no completion date identified.
	Anti-Air Warfare (AAW)	🟡	Same as above.
Scoring & Feedback System	Strike Warfare (STW)	🟡	Link-16 and the introduction of TCTS at NAS Lemoore provide a basic-level of TSPI coverage of NOCAL MOAs, with some debriefing and mission reconstruction capability. There is currently no M&S capability and limited scoring system. The maturing of TCTS will provide the needed upgrade. There is an unmet requirement for a Range Training Officer/Range Safety Officer (RTO/RSO) capability. RTO/RSO capability would improve overall training and would enable training operators to evaluate training evolutions in real-time and provide a safety aspect. NAS Lemoore is one of the only installations without RTO/RSO capability. Funding would need to included in both installation facilities and range infrastructure budgets. These shortfalls increase O&M costs, increase personnel optempo, reduce realism, and inhibit tactics. The Navy needs to invest in JNTC compliant M&S and expand TCTS coverage to link with other feasible range areas. The Navy also needs to invest in RTO/RSO capabilities at NAS Lemoore. There is no completion date identified.
	Anti-Air Warfare (AAW)	🟡	Same as above.
Range Support	Strike Warfare (STW)	🟡	There is an unmet requirement for a RTO/RSO capability. RTO/RSO capability would improve overall training and would enable training operators to evaluate training evolutions in real-time and provide a safety aspect. NAS Lemoore is one of the only installations without RTO/RSO capability. Funding would need to include both installation facilities and range infrastructure. The current debriefing system has a lag time of about 1 ½ hours. The lack of RTO/RSO capability decreases safety and training realism because training operators cannot confirm kill shots or remove training participants from the training exercise. The Navy needs to invest in RTO/RSO capabilities at NAS Lemoore. The set up would need to be similar to Fallon or Key West, to include radios, tracking/controlling, and record/playback capability for real time safety and debrief. There is no completion date identified.
	Anti-Air Warfare (AAW)	🟡	Same as above.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

NOCAL Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Range Transients	Strike Warfare (STW)	●	Civil aircraft fly through the Hunter, Roberts, and Foothills MOAs when the MOAs are activated. Military aircrews must be vigilant to see and avoid small civil aircraft. This encroachment requires aircrews to direct their attention away from the mission at-hand to avoid collisions or near misses with civil aircraft. It also prohibits certain training events, segments training, reduces realism, and inhibits new tactics development. The Navy and the Army may seek to enlarge the MOAs and create transit corridors, for civil aircraft, that are below the training altitudes for military aircraft.
	Anti-Air Warfare (AAW)	●	Same as above.

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Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Northwest Training Range Complex Assessment Details

Range Mission Description

The Northwest Training Range Complex offers operating areas with varied littoral water conditions, depths, and bottom types supported by airspace warning areas. The range complex has a mission to support basic and intermediate level training events for Strike Warfare (STW), Antisubmarine Warfare (ASW), Mine Warfare (MW), Electronic Combat (EC), Antisurface Warfare (ASUW), and Naval Special Warfare for Naval Special Warfare (and Explosive Ordnance Disposal forces).

In the Northwest Training Range Complex, EOD training and complexity levels have historically been captured under NSW as that was the most appropriate Warfare Mission Area under which to analyze their capabilities. In future editions of the RCMP, EOD will be broken out from NSW.

Capability Data

Mission Areas	Capability Attributes												
	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
Strike Warfare	PMC	PMC	FMC	FMC	PMC	PMC	PMC		PMC				
Electronic Combat	FMC	PMC	PMC	FMC		NMC	NMC	NMC	NMC				
Anti-Air Warfare	FMC	PMC	FMC		PMC	PMC	PMC		PMC				
Anti-Surface Warfare		FMC	FMC	FMC	PMC	PMC	PMC		PMC				
Mine Warfare		FMC	FMC	FMC	FMC	FMC	FMC		PMC				
Amphibious Warfare													
Anti-Submarine		FMC	FMC	PMC	FMC	FMC	FMC		PMC				
Naval Special Warfare	FMC	FMC	FMC	FMC	FMC	FMC	FMC		FMC				
Expeditionary Warfare													

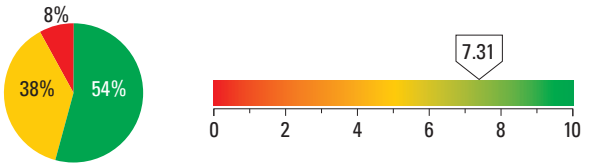
Legend: FMC PMC NMC

Encroachment Data

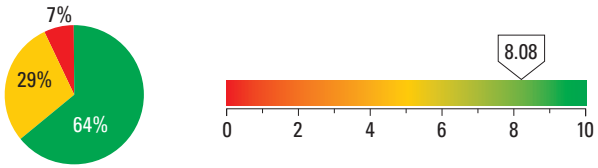
Mission Areas	Encroachment Factors											
	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Strike Warfare	Minimal	Minimal	Minimal	Minimal	Severe	Minimal	Minimal	Severe	Minimal	Minimal	Minimal	Minimal
Electronic Combat			Moderate		Moderate	Minimal	Minimal	Minimal				Minimal
Anti-Air Warfare			Minimal	Minimal	Severe	Minimal	Minimal	Severe				Minimal
Anti-Surface Warfare			Minimal	Moderate	Minimal		Moderate	Moderate	Minimal			Minimal
Mine Warfare		Minimal	Minimal	Moderate	Minimal				Minimal			Minimal
Amphibious Warfare												
Anti-Submarine			Minimal	Moderate	Minimal			Moderate	Minimal			Moderate
Naval Special Warfare	Minimal	Minimal		Moderate				Moderate	Minimal	Minimal	Minimal	Moderate
Expeditionary Warfare												

Legend: Minimal Moderate Severe

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

The capability attributes most impacting range mission performance are Targets, Threats (EC) and Range Support, Capabilities, and Scoring & Feedback Systems. The mission areas most severely impacted are EC and AAW. The Navy plans to continue with the planned investment of an EW Mobile Range, to include threat simulators, 1 fixed and 3 mobile, support facilities, and secure/non-secure communications and instrumentation as well as invest in additional Range Support and O&M.

Note on NSW Assessments: Assessments of Navy Special Warfare (NSW) training are based on actual NSW demand and use of training range capability and space. Actual Training range capability and space requirements are based on Fleet Readiness Training Plan demands for conventional warfare areas.

Summary Observations

Frequency Spectrum and competition for Airspace and Landspace are the encroachment factors with the most impact on training. Wind energy projects inside of restricted airspace at Naval Weapons Systems Training Facility (NWSTF) Boardman significantly impact low altitude tactical training capability. AAW and STW are the mission areas most affected by encroachment. MIW, EW, ASUW and ASW are "tied for second place" in terms of being mission areas most affected by encroachment. The Navy has implemented training procedures, mitigation measures, and workarounds to accommodate encroachment. Navy efforts to mitigate encroachment are a continuing effort.

Northwest Training Range Complex Assessment Details

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Capability Scores	7.98	7.88	7.88	7.79	7.69

ASUW threats were Green in 2008 and re-evaluated to Yellow in 2009 and beyond based on review of range capability and impacts with PACFLT. EC Threats were Green in 2009, were re-evaluated to Yellow in 2010, and re-evaluated to Red in 2012 due to the introduction of the EA-18G within the range complex area. Mobile EW equipment has been requested to provide required EC threats. Signal variations will meet FRS training requirements, however, signal variations attainable do not meet all the Fleet EA-18G training requirements. Other than lack of EC system and facility capability the NWTRC had no other emerging capability issues during 2014 that affect NWTRC operations.

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Encroachment Scores	9.40	9.04	9.04	8.58	8.08

Encroachment assessments for CY2008 were different than for CY2009, 2010, and 2011. The algorithm for the overall assessment score for 2009–2011 was revised from the original algorithm used in 2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009, 2010, and 2011 provide a more accurate assessment of encroachment. The assessments for the latter three years reveal there has been little encroachment change from year to year, with relatively constant overall scores for CY2009, 2010, and 2011. NWSTF Boardman is in process of losing low altitude training capability below 1000 feet above ground level due to vertical encroachment from 79 wind energy projects (21 constructed) that place wind turbines within the Boardman Restricted Airspace. The wind turbines range from 400–450 feet in height. There is a 500 feet vertical and lateral clearance criteria in the vicinity of each wind turbine for aircraft activity. Combined with the approximate 450 feet height of a wind turbine, the 500 feet clearance criteria mandates that low altitude flying in the vicinity of a wind turbine must remain at roughly 1000 feet or greater above ground level. Additionally a dairy farm has been established in the WSTF Boardman Arlington easement. This structure has caused the loss of approximately 1 mile of run-in arming area for aircraft into the main target area. Due to Northwest Training Range Complex (NWTRC) EIS ROD of October 2010 and a Letter of Authorization from November 2010, there are now restrictions on training events that were not previously in place.

Northwest Training Range Complex Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strike Warfare (STW)	●	The range size does not meet requirements, live ordnance is not allowed, and only use of inert ordnance at basic and intermediate level is authorized. This inhibits tactics development, limits application of new weapon technologies, increases personnel optempo, and increases O&M costs. The Navy plans to redevelop the bombing range area and establish range control. No completion date has been identified.
Airspace	Strike Warfare (STW)	●	The range size and altitudes do not meet requirements and supersonic operations are not allowed over land. This inhibits tactics development, limits application of new weapon technologies, increases personnel optempo, and increases O&M costs. The Navy plans to coordinate larger areas and higher altitudes to meet requirements. No completion date has been identified.
	Electronic Combat (EC)	●	The Darrington OPAREA EW operating altitude limits are not clearly specified, but can be expected from 10,000 ft. (3,048 m) MSL to FL230. Flare expenditure is allowed overland, but only in designated Special Use Airspace (SUA). Increased airspace is most likely necessary to accommodate the additional EA-18Gs and their additional Air Combat Maneuver training requirements. Existing SUA is becoming overcrowded and flight delays are occurring while awaiting clearance to enter MOAs. Delays are causing a loss of training time and occasionally cancellation of training events. The Navy recommends pursuing an increase in area and vertical limit of SUA. Additional airspace for NWSTF Boardman is in progress and the need for additional MOA airspace is noted in the Regional Airspace Plan.
	Anti-Air Warfare (AAW)	●	If continued rural development and alternative energy wind generators are not curtailed, Low Altitude Tactical Training (LATT) will be impacted in the future. This segments training, prohibits certain training events, reduces realism, and inhibits new tactics development. The range should apply for additional airspace to support training needs. The Navy is exploring options for expanding the MOAs (Olympic MOA and Darrington Operating Area). The Navy will continue to support encroachment initiatives for pursuing land easements and purchases in the vicinity of NWSTF Boardman.
Seaspace	Electronic Combat (EC)	●	The land area where the EC emitter is located cannot support seaspace EC. This inhibits tactics development, limits application of new weapon technologies, increases personnel optempo, and increases O&M costs. The Navy development of a mobile EW range for Okanogan, Roosevelt and Olympic MOAS is in conceptual planning. There is no completion date identified.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Northwest Training Range Complex Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Underseaspace	Anti-Submarine (ASW)	🟡	Some loss of underseaspace is being realized due to existing hydrophone arrays within northern sections of the PACNORWEST OPAREA, which is causing some of the undersea space to be unavailable for training. This inhibits tactics development, limits application of new weapon technologies, increases personnel optempo, and increases O&M costs. Training is conducted in Nanoose and in the SOCAL OPAREAs and by submarines training further south in the PACNORWEST OPAREA. However, training further south may be impacted due to the expected civilian hydrophone deployments in the waters of Washington, Oregon, and California.
Targets	Strike Warfare (STW)	🟡	NWSTF Boardman is cleared for inert ordnance only and supports only transient aircraft training. The range is not laser certified. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits new tactics development, reduces live fire proficiency, increases personnel tempo, and increases O&M costs. The Navy will complete the comprehensive EIS initiated to analyze the re-development of the bombing range target areas and target suites and add enhanced EW capabilities. Additionally, the range needs Laser Certification to support laser targeting systems.
	Anti-Air Warfare (AAW)	🟡	There is no towed target or subscale target capability in the range complex. This reduces live fire proficiency, limits application of new weapon technologies, increases personnel optempo, and increases O&M costs. The Navy plans to invest in commercial air services with target towing and other target capabilities. No completion date has been identified.
	Anti-Surface Warfare (ASUW)	🟡	There are no targets available or targets provided by range users. This reduces realism, inhibits tactics development, limits application of new weapon technologies, increases personnel optempo, and increases O&M costs. The Navy plans to invest in required self propelled, towed, programmed or remote controlled targets. No completion date has been identified.
Threats	Strike Warfare (STW)	🟡	The full required EC threat level does not exist at the bombing range. There is no live or virtual, rotary or fixed wing threat at the bombing range. The acquisition of re-locatable EC threat simulators has been initiated. Navy will coordinate with other range users (USAF, Oregon Air or Army Guard) to provide threat support or use Contract Air Service. No completion date has been identified.
	Electronic Combat (EC)	🔴	Realistic OPFOR variety and responses are not available and EC threats are not available. This reduces realism, inhibits new tactics development, limits application of new weapon technologies, reduces live fire proficiency, increases personnel optempo, and increases O&M costs. The Navy plans to invest in enhanced EC threat capabilities. Estimated operational date of EW range is July 2015.
	Anti-Air Warfare (AAW)	🟡	There is no dedicated OPFOR. This reduces realism, inhibits tactics development, increases personnel optempo, and increases O&M costs. The Navy plans to invest in commercial air services equipped with required threat augmentation. No completion date has been identified.
	Anti-Surface Warfare (ASUW)	🟡	There is no dedicated OPFOR. This reduces realism, inhibits tactics development, increases personnel optempo, and increases O&M costs. The Navy plans to investigate the potential to use range craft for OPFOR presentation. No completion date has been identified.
Scoring & Feedback System	Strike Warfare (STW)	🟡	The range lacks instrumentation and there is no real-time or debrief capability. This increases personnel optempo, reduces realism, increases O&M costs, and inhibits tactics development. The Navy plans to invest in instrumentation that will meet requirements for an instrumented range. No completion date has been identified.
	Electronic Combat (EC)	🔴	There is no feedback system in place. This reduces realism, inhibits tactics development, increases personnel optempo, and increases O&M costs. The EW range will have debrief capability. The EW range estimated operational availability date is July 2015.
	Anti-Air Warfare (AAW)	🟡	The range lacks instrumentation and there is no real-time or debrief capability. This increases personnel optempo, reduces realism, increases O&M costs, and inhibits tactics development. The Navy plans to invest in instrumentation that will meet requirements for an instrumented range. No completion date has been identified.
	Anti-Surface Warfare (ASUW)	🟡	Same as above.
Infrastructure	Electronic Combat (EC)	🔴	An additional infrastructure need has been identified in support of establishment of the Pacific Northwest Electronic Warfare (PNW EW) Range. The new range requires building renovation, access to existing Navy communication towers and additional communication and data network systems. Lack of infrastructure will inhibit implementation of the PNW EW Range. PACFLT and USFF are working the funding issue, in need of $600K for facilities at Naval Station Everett (NSE) Annex Pacific Beach.

Northwest Training Range Complex Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Range Support	Strike Warfare (STW)	🟡	The lack of real-time and post-event modules precludes use of the most efficient scheduling and documenting of range usage. Non-compliance, or inaccurately reporting, post-event details risks range events. Scheduling issues reduce range access, prohibit certain training events, reduce realism, and segment training. PACFLT has developed DCAST, however the post-event module required to mitigate issues outlined above has already been installed. The after action reporting module and real-time event module are still to be installed.
	Electronic Combat (EC)	🔴	Same as above. In addition, there is no infrastructure in place to support EC training in the NWTRC. Without TSPI, communications and data network, and facilities to support EC training, these shortfalls effectively prohibit EW training in the NWTRC. NAVAIR, USFF, Commander, U.S. Pacific Fleet (CPF), Commander, Naval Air Forces Pacific (CNAP), and Commander, Navy Installations Command (CNIC) are in the process of establishing the infrastructure needed to support EW training in NWTRC.
	Anti-Air Warfare (AAW)	🟡	Same as above. Additionally there is no infrastructure in place to support AAW training.
	Anti-Surface Warfare (ASUW)	🟡	Same as above. Additionally there is no infrastructure in place to support ASUW training.
	Mine Warfare (MW)	🟡	Same as above. Additionally there is no infrastructure in place to support MW training.
	Anti-Submarine (ASW)	🟡	Same as above. Additionally there is no infrastructure in place to support ASW training.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Spectrum	Electronic Combat (EC)	🟡	Jamming is severely restricted east of the Cascade Mountains (Okanogan and Roosevelt MOAs) due to satellite communications stations, etc. Additional jamming target sets have developed in current combat theaters that can not be jammed for training in inhabited areas. Restrictions from the Joint Restricted Frequency List (JRFL) and the FAA create avoidance areas, prohibit certain training events, segments training/ reduces realism, limits application of new weapons technologies, and inhibits new tactics development. Aircrews travel to NAS Fallon and Mountain Home AFB to complete EC training requirements. Restrictions on surface combatant radar (SPS-49) limit its use within 100 NM of land. Workarounds currently permit completion of training. EC range placement is underway for the Olympic MOA and W-237 area with possible future expansion into the Okanogan and Roosevelt MOAs. However, these EC ranges for now are passive only with no jamming. With passive EW ranges in place all training requirements for the FRS will be met. However Fleet TRS will not be met and Fleet aircraft will still have to travel to NAS Fallon to complete.
Maritime Sustainability	Anti-Surface Warfare (ASUW)	🟡	Maritime protective and mitigation measures undertaken in compliance with regulatory requirements have resulted in training restrictions that reduce training flexibility and ultimately reduce training realism. All at-sea training is impacted to some degree; impacts are most significant to integrated warfare training using active underwater acoustic sources. The Navy and National Marine Fisheries Service (NMFS) have developed science based protective and mitigation measures that adequately protect marine species while accommodating military readiness activities. The Navy continues to develop Environmental Impact Statements and obtain permits and authorizations for its range complexes to ensure military training complies with applicable laws and regulations. Litigation risks remain a concern, entailing the potential to delay or further restrict training, despite the protective and mitigation measures applied by the Navy in compliance with the MMPA and the ESA. Endangered species/critical habitat encroachment from the North Atlantic right whale has created avoidance areas that have resulted in some reduction of training days and prohibits certain training events. This area is relatively small in scope, however, if these types of restrictions were applied to other species/areas, there would be significant impacts to readiness through reduction in range access, segmentation of training/reduction in realism, limits on the application of new technologies, raised flight altitudes, reduced live fire proficiency, increased personnel tempo, and increased O&M costs. The Navy will continue to invest in marine mammal research; rely on scientifically valid empirical data results as basis of marine mammal mitigation development; factor mitigation effectiveness into permit requests and continue education of Fleet units to adhere to the maritime protective and mitigation measures and public education outreach efforts. Navy's authorizations under the MMPA and ESA include an adaptive management approach that includes continually evaluating existing mitigation measures for their potential impacts on training. If impacts on training from mitigation measures are identified and documented, Navy will raise these impacts with NMFS for resolution during an annual adaptive management review process.
	Mine Warfare (MW)	🟡	Same as above.
	Anti-Submarine (ASW)	🟡	Same as above.
	Naval Special Warfare (NSW)	🟡	Same as above.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Northwest Training Range Complex Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Airspace	Strike Warfare (STW)	🔴	Wind Energy projects in restricted airspace and an FAA determination of no hazard has lead to loss of low altitude tactical training at NWSTF Boardman. The FAA determination of no hazard allows wind turbine construction inside restricted airspace. Presence of 450 foot tall wind turbines in restricted airspace and a 500 ft vertical and lateral clearance requirement in the vicinity of each wind turbine mandates that low altitude training in the Boardman airspace must be at least 1000 ft above ground level. An established dairy farm in the NWSTF Boardman Arlington easement has caused the loss of approximately 1 mile of run-in arming area for aircraft into the main target area. Wind energy projects reduce access, prohibit certain training events, segment training, reduce realism and raise flight altitudes. Purchases of restrictive easements from land owners is in progress, however, funding for easement purchases is difficult. Due to long administrative timeline land owners may still build wind turbines if no easement is purchased. Additionally, the Navy is pursuing the addition of a MOA joining current airspace and an extension of the current Boardman MOA in order to maintain training capability.
	Electronic Combat (EC)	🟡	VQ Aircrews based at NAS Whidbey Island train in Electronic Reconnaissance in the Darrington OPAREA. Due to commercial air traffic, Navy aircraft routinely experience difficulty getting clearance from Seattle ARTCC (FAA) to climb above Flight Level 250. Due to civilian traffic, Navy aircraft are routinely vectored around by Seattle ARTCC causing delays, wasting airborne training time. These restrictions result in reduced range access. The Navy is currently developing a mobile EW training emitter system to operate in the military OPAREAs such as Okanogan, Roosevelt and Olympic MOAs. Additionally, the Navy is working on establishment of additional training airspace.
	Anti-Air Warfare (AAW)	🔴	Wind Energy projects in restricted airspace and an FAA determination of no hazard has lead to loss of low altitude tactical training at NWSTF Boardman. The FAA determination of no hazard allows wind turbine construction inside restricted airspace. Presence of 450 foot tall wind turbines in restricted airspace and a 500 ft vertical and lateral clearance requirement in the vicinity of each wind turbine mandates that low altitude training in the Boardman airspace must be at least 1000 ft above ground level. An established dairy farm in the NWSTF Boardman Arlington easement has caused the loss of approximately 1 mile of run-in arming area for aircraft into the main target area. Wind energy projects reduce access, prohibit certain training events, segment training, reduce realism and raise flight altitudes. Purchases of restrictive easements from land owners is in progress ,however funding for easement purchases is difficult. Due to long administrative timeline land owners may still build wind turbines if no easement is purchased. Additionally, the Navy is pursuing the addition of a MOA joining current airspace and an extension of the current Boardman MOA in order to maintain training capability.
Noise Restrictions	Anti-Surface Warfare (ASUW)	🟡	Units are unable to perform required training within the Crescent Harbor Naval OPAREA due to noise from shooting blanks. This is not covered in current EIS and LOA. Shooting blanks (M16,M4,9mm,50 cal,240, shotgun) on water training has no NEPA coverage. During the next update to the Northwest Testing and Training EIS, Navy must ensure coverage for noise from shooting blanks inside the Crescent Harbor Naval OPAREA.

Northwest Training Range Complex Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Adjacent Land Use	Strike Warfare (STW)	🔴	Wind energy projects in restricted airspace and an FAA determination of no hazard has lead to loss of low altitude tactical training at NWSTF Boardman. The FAA determination of no hazard allows wind turbine construction inside restricted airspace. Presence of 450 foot tall wind turbines in restricted airspace and a 500 ft vertical and lateral clearance requirement in the vicinity of each wind turbine mandates that low altitude training in the Boardman airspace must be at least 1000 ft above ground level. An established dairy farm in the NWSTF Boardman Arlington easement has caused the loss of approximately 1 mile of run-in arming area for aircraft into the main target area. Wind energy projects reduce access, prohibit certain training events, segment training, reduce realism and raise flight altitudes. Purchases of restrictive easements from land owners is in progress, however, funding for easement purchases is difficult. Due to long administrative timeline land owners may still build wind turbines if no easement is purchased. Additionally, the Navy is pursuing the addition of a MOA joining current airspace and an extension of the current Boardman MOA in order to maintain training capability.
	Anti-Air Warfare (AAW)	🔴	Same as above.
	Anti-Surface Warfare (ASUW)	🟡	EOD training in Crescent Harbor Naval Operations Area suffers the occasional presence of recreational and small commercial fishing boats and SCUBA diving as the training areas are not restricted areas. Transient activity creates avoidance areas, prohibits certain training events, and segments training/ reduces realism. A possible workaround is to have monitoring in place to watch out for the occasional recreational and small commercial fishing boats and SCUBA diving. Requesting the non-participating boat to leave is generally effective, however, delays and cancellation of the event may occur if the non-participating boat does not depart the area.
	Anti-Submarine (ASW)	🟡	Ocean Observing Systems (OOS) have been deployed on the ocean floor by civilian scientists in off-shore training and operating areas. The effect is that U.S. Navy submarines have been directed to remain clear of this area. The exact size and location of this area is classified. OOS create avoidance areas, prohibit certain training events, and segment training/reduce realism. There is no short term solution. Navy has established the OOS Situational Awareness Office (SAO) as the central clearinghouse to catalog and assess impacts of OOS.
	Naval Special Warfare (NSW)	🟡	EOD training in Crescent Harbor and Indian Island areas suffer occasional presence of recreational and small commercial fishing boats and SCUBA diving as the underwater detonation training areas are not restricted areas. Transient activity creates avoidance areas, prohibits certain training events, and segments training/reduces realism. NAS Whidbey Island attempted to pursue establishment of a restricted area within Crescent Harbor to restrict access to the underwater detonation range during training operations. The new restricted area proved cost prohibitive due to budget and the movement of EOD MU 11 to California.
Range Transients	Anti-Submarine (ASW)	🟡	Commercial and private shrimp fishing boats congregate in Dabob Bay for several weeks in late April to mid June. Additionally, Native Americans fishing for clams and shrimp traverse across NUWC RDT&E ranges without contacting NUWC Operations, thereby interfering with ongoing events. Commercial vessel and recreational vessel encroachment create avoidance areas and segments training/reduces realism. The Navy will continue to pursue opportunities to inform industry and the public of the impacts of range transient encroachment to Navy readiness.
	Naval Special Warfare (NSW)	🟡	Commercial and private shrimp fishing boats congregate in Dabob Bay for several weeks in late April to mid June. Additionally, Native Americans fishing for clams and shrimp traverse across NUWC RDT&E ranges without contacting NUWC Operations, thereby interfering with ongoing events. Native American and civilian fishing boats occasionally inhibit EODMU-11 underwater detonation training in Crescent Harbor. Native American and fishing activities create avoidance areas, prohibit certain training events, and segment training/reduce realism. The Navy continues to work with law enforcement agencies to enforce the Dabob Bay Restricted Area during RDT&E and occasional NSW training activities.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Okinawa Assessment Details

Range Mission Description

The Okinawa Range Complex has airspace, seaspace, underseaspace, and landspace to support mission requirements for STW, EC, AAW, ASUW, MW, AMW, and ASW. It does not have a mission for supporting EXW and NSW training.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strike Warfare	●	●	●		●	●	●		●				
Electronic Combat	●	●	●		●	●	●		●				
Anti-Air Warfare	●	●	●		●	●	●		●				
Anti-Surface Warfare		●	●	●	●	●	●		●				
Mine Warfare		●	●	●	●	●	●		●				
Amphibious Warfare	●	●	●	●	●	●	●		●				
Anti-Submarine		●	●	●	●	●	●		●				
Naval Special Warfare													
Expeditionary Warfare													

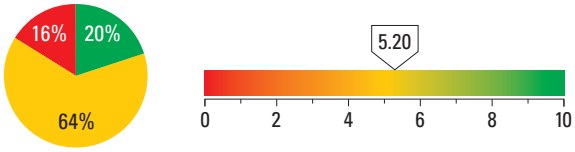
Legend: FMC ● PMC ● NMC ●

Encroachment Data

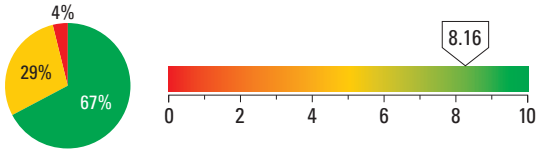
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strike Warfare	●	●	●	●	●	●	●	●	●	●	●	●
Electronic Combat	●		●		●	●	●	●				●
Anti-Air Warfare			●		●	●	●	●				●
Anti-Surface Warfare			●	●	●				●			●
Mine Warfare			●	●	●				●			●
Amphibious Warfare	●		●	●	●		●	●	●		●	●
Anti-Submarine			●	●	●				●			●
Naval Special Warfare												
Expeditionary Warfare												

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

The capability attribute most impacting range mission performance is Threats, and Scoring & Feedback Systems. The mission areas most severely impacted are STW, EW, and AAW. No immediate change to this status is projected. The range recommends Navy continue deployments of an EW emitter system, possibly compatible with MPRC as well as Man Portable Air Defense Systems (MANPADS), continues development of TCTS system, refreshes STW targets on Okino Daito Jima (ODJ), and continue with Portable Underwater Tracking Range (PUTR) or Portable Acoustic Range (PAR), deployments.

Summary Observations

Spectrum is the encroachment factor with greatest impact on training. EC and AAW are the two mission areas with greatest encroachment from Spectrum. The Navy continues to coordinate with GOJ agencies to seek encroachment relief and to develop strategies that will reduce encroachment while ensuring quality training operations.

Okinawa Assessment Details

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Capability Scores	4.90	5.00	5.10	5.10	5.10
ASW in 2008 Tracking & Scoring was Red, then was re-evaluated to Yellow in 2009, and forward, based on the availability of the PAR/PUTR which provides a partial capability for ASW training. STW in 2009 Targets were Red (no targets), then re-evaluated to Yellow in 2010, and forward, based on "limited" target availability. Currently, target refresh at ODJ is on hold. TCTS is currently not available in Okinawa/7th Fleet due to RF restrictions. A multi-purpose range craft (MPRC) has been deployed to Seventh Fleet that will support aerial drone, MK-30 (ASW target), and mine shape launch and recovery, deployment/recovery of the portable ASW range, and electronic warfare training (limited).					

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Encroachment Scores	9.23	8.16	8.16	8.16	8.16
Encroachment assessments for CY2008 were different than for CY2009, 2010, and 2011. The algorithm for the overall assessment score for 2009–2011 was revised from the original algorithm used in 2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009, 2010, and 2011 provide a more accurate assessment of encroachment. The assessments for the latter three years reveal there has been little encroachment change from year to year, with relatively constant overall scores for CY2009, 2010, and 2011. There is little indication encroachment pressures will change in the foreseeable future.					

Okinawa Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strike Warfare (STW)	🟡	The range land area is too small, which prohibits certain training events, reduces realism, limits application of new technologies, inhibits new tactics development, reduces live fire proficiency, increases personnel optempo, and increases O&M costs. The Navy will pursue opportunities with other Services. No completion date has been identified.
	Electronic Combat (EC)	🔴	The range has no land area that supports EC training due to political and frequency spectrum constraints. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits new tactics development, reduces live fire proficiency, increases personnel optempo, and increases O&M costs. The Navy recommends conducting a feasibility study for EC assets to be incorporated into a high fidelity, inert, A-G training range and pursuing a MPRC with EC assets. No completion date has been identified. MPRC arrived in Okinawa Oct 2013. The MPRC contract has just recently been awarded. Mitigating impacts of MPRC will be evaluated this year.
	Anti-Air Warfare (AAW)	🟡	There is no overland airspace that supports AAW training. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits new tactics development, reduces live fire proficiency, increases personnel optempo, and increases O&M costs. The Navy recommends pursuing opportunities with other Services. No completion date has been identified.
	Amphibious Warfare (AMW)	🟡	The range is not contiguous with the required size of beachfront area. The beach area is very limited and the area does not support NSFS. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits new tactics development, reduces live fire proficiency, increases personnel optempo, and increases O&M costs. The Navy recommends pursuing opportunities with other Services. No completion date has been identified.
Airspace	Anti-Air Warfare (AAW)	🟡	The range has no overland airspace supporting AAW training. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits new tactics development, reduces live fire proficiency, increases personnel optempo, and increases O&M costs. The Navy recommends pursuing opportunities with other Services. No completion date has been identified.
	Amphibious Warfare (AMW)	🟡	The range has no airspace over beaches that meet training requirements. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits new tactics development, reduces live fire proficiency, increases personnel optempo, and increases O&M costs. The Navy recommends pursuing opportunities with other Services. No completion date has been identified.
	Anti-Submarine (ASW)	🟡	The airspace is not supported by an Undersea Warfare Training Range. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits new tactics development, reduces live fire proficiency, increases personnel optempo, and increases O&M costs. MPRC arrived in Okinawa Oct 2013. The Navy is continuing development of MPRC with PAR/PUTR capability with no completion date identified. The MPRC contract has just recently been awarded. The mitigating impacts of MPRC will be evaluated this year.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Okinawa Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Seaspace	Mine Warfare (MW)	●	The range has insufficient geographic references and the water is too deep. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits new tactics development, reduces live fire proficiency, increases personnel optempo, and increases O&M costs. The Navy recommends pursuing opportunities with other Services. No completion date has been identified.
	Amphibious Warfare (AMW)	●	The range is not contiguous with the required size of beachfront area. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits new tactics development, reduces live fire proficiency, increases personnel optempo, and increases O&M costs. The Navy recommends pursuing opportunities with other Services. No completion date has been identified.
	Anti-Submarine (ASW)	●	Seaspace is not supported by an Undersea Warfare Training Range. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits new tactics development, reduces live fire proficiency, increases personnel optempo, and increases O&M costs. MPRC arrived in Okinawa Oct 2013. The Navy will continue development of PUTR capability. No completion date has been identified. The MPRC contract has just recently been awarded. The mitigating impacts of MPRC will be evaluated this year.
Underseaspace	Mine Warfare (MW)	●	Sufficient space exists, but the bottom type does not have the required characteristics, the water depth is too deep, no undersea warfare training range is available, there is no dedicated Shock Wave Action Generator (SWAG) training area, and there is no mine avoidance area. These shortfalls prohibit certain training events, reduce realism, limit application of new technologies, inhibit new tactics development, reduce live fire proficiency, increase personnel optempo, and increase O&M costs. The Navy recommends pursuing opportunities with other Services and evaluating the feasibility of installing a mine range with instrumented shapes, false targets, bottom mines, and mines approved for SWAG training. The Navy will also evaluate the feasibility of creating a shallow water OPAREA. No completion date has been identified.
	Amphibious Warfare (AMW)	●	The range is not contiguous with the required size of beachfront area. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits new tactics development, reduces live fire proficiency, increases personnel optempo, and increases O&M costs. The Navy recommends pursuing opportunities with other Services. No completion date has been identified.
	Anti-Submarine (ASW)	●	The underseaspace does not have significant areas with water less than 600 ft deep and it is not supported by an Undersea Warfare Training Range. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits new tactics development, reduces live fire proficiency, increases personnel optempo, and increases O&M costs. MPRC arrived in Okinawa Oct 2013. The Navy will continue to develop PUTR capability. No completion date has been identified. The MPRC contract has just recently been awarded. The mitigating impacts of MPRC will be evaluated this year.

Okinawa Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Targets	Strike Warfare (STW)	🟡	The range has limited targets available, they were last replaced Dec 2008. There is a planned target refresh in 2014 that is on-hold due to continuing USMC requirement to drop cluster submunitions on ODJ. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits new tactics development, reduces live fire proficiency, increases personnel optempo, and increases O&M costs. The Navy recommends pursuing opportunities with other Services and to procure high fidelity targets. No completion date has been identified.
	Electronic Combat (EC)	🔴	The range has no dedicated EC targets available. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits new tactics development, reduces live fire proficiency, increases personnel optempo, and increases O&M costs. The Navy recommends conducting a feasibility study for EC assets to be incorporated into a high fidelity, inert, A-G training range; also to pursue MPRC with EC assets. No completion date has been identified. MPRC arrived in Okinawa Oct 2013. The MPRC contract has just recently been awarded. Mitigating impacts of MPRC will be evaluated this year.
	Anti-Air Warfare (AAW)	🟡	The range has no supersonic targets available and no dedicated targets available. This reduces live fire proficiency, increases personnel optempo, and increases O&M costs. The Navy recommends increasing the availability of Commercial Air Services (CAS) and pursuing MPRC options. No completion date has been identified.
	Mine Warfare (MW)	🟡	While limited targets are available, there are no dedicated targets that meet full training requirements. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits new tactics development, reduces live fire proficiency, increases personnel optempo, and increases O&M costs. The Navy recommends pursuing opportunities with other Services, evaluating the feasibility of installing a mine range with instrumented shapes, false targets, bottom mines, mines approved for SWAG training, and evaluating the feasibility of creating a shallow water OPAREA. No completion date has been identified.
	Amphibious Warfare (AMW)	🟡	The range has no targets available to support AMW. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits new tactics development, reduces live fire proficiency, increases personnel optempo, and increases O&M costs. The Navy recommends pursuing opportunities with other Services. No completion date has been identified.
	Anti-Submarine (ASW)	🟡	The range has no dedicated ASW targets available. Units typically supply their own expendable targets. This prohibits certain training events, reduces realism, limits application of new technologies, inhibits new tactics development, reduces live fire proficiency, increases personnel optempo, and increases O&M costs. A MK-30 ASW Target facility is being considered on Okinawa. the Navy additionally recommends increasing the availability of ASW targets by pursuing MPRC support. No completion date has been identified. MPRC arrived in Okinawa Oct 2013. The MPRC contract has just recently been awarded. Mitigating impacts of MPRC will be evaluated this year.
Threats	Strike Warfare (STW)	🔴	The range has no dedicated OPFOR available. This reduces realism, limits application of new technologies, and inhibits new tactics development. The Navy recommends improving the availability of CAS and the number and variety of threats, and pursuing MPRC with EC capability. No completion date has been identified.
	Electronic Combat (EC)	🔴	Same as above.
	Anti-Air Warfare (AAW)	🔴	Same as above.
	Anti-Surface Warfare (ASUW)	🟡	Same as above.
	Mine Warfare (MW)	🟡	Same as above.
	Amphibious Warfare (AMW)	🟡	Same as above.
	Anti-Submarine (ASW)	🟡	Same as above.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Okinawa Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Scoring & Feedback System	Strike Warfare (STW)	🔴	No permanent instrumentation exists for this range. This reduces realism, limits application of new technologies, and complicates night and all weather training. The Navy recommends continuing planned deployment of TCTS and evaluating the potential to accelerate its deployment. No completion date has been identified.
	Electronic Combat (EC)	🔴	Same as above.
	Anti-Air Warfare (AAW)	🔴	Same as above.
	Anti-Surface Warfare (ASUW)	🟡	Same as above.
	Mine Warfare (MW)	🟡	Same as above.
	Amphibious Warfare (AMW)	🟡	Same as above.
	Anti-Submarine (ASW)	🟡	Same as above.
Range Support	Strike Warfare (STW)	🟡	DCAST is in place and being utilized, but the data collection after-action module is not fully activated. The range needs to fully implement DCAST after action module.
	Electronic Combat (EC)	🟡	Same as above.
	Anti-Air Warfare (AAW)	🟡	Same as above.
	Anti-Surface Warfare (ASUW)	🟡	Same as above.
	Mine Warfare (MW)	🟡	Same as above.
	Amphibious Warfare (AMW)	🟡	Same as above.
	Anti-Submarine (ASW)	🟡	Same as above.

Okinawa Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Amphibious Warfare (AMW)	🟡	When the native Dugong species is spotted, the Marines change tactics to avoid interaction. Dugong live in the near-shore waters; thus, their presence can interrupt amphibious operations. Dugong protective measures create avoidance areas, prohibit certain training events, reduce range access, and segment training. Both the Navy and Marine Corps seek to avoid operating in the vicinity of the dugong.
Spectrum	Strike Warfare (STW)	🟡	Restrictions on RF emissions limit the use of the Tactical Combat Training System (TCTS). These restrictions limit spectrum operations and prohibit certain training events, segment training and reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with GOJ agencies to seek spectrum relief and to develop encroachment strategies that will reduce encroachment while ensuring future use of emerging spectrum technologies.
	Electronic Combat (EC)	🔴	There are no EW training ranges due to RF restrictions. USAF added some EW emitters for training at R130 Draughon range in 2013. RF restrictions limit spectrum operations and prohibit certain training events, segment training and reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with GOJ agencies to seek spectrum relief and to develop encroachment strategies that will reduce encroachment while ensuring future use of emerging spectrum technologies.
	Anti-Air Warfare (AAW)	🔴	Same as above.
	Anti-Surface Warfare (ASUW)	🟡	Restrictions on RF emissions limit the use of the TCTS. These restrictions limit spectrum operations and prohibit certain training events, segment training and reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with GOJ agencies to seek spectrum relief and to develop encroachment strategies that will reduce encroachment while ensuring future use of emerging spectrum technologies.
Maritime Sustainability	Anti-Surface Warfare (ASUW)	🟡	Maritime protective and mitigation measures undertaken in compliance with regulatory requirements have resulted in training restrictions that reduce training flexibility and ultimately reduce training realism. All at-sea training is impacted to some degree; impacts are most significant to integrated warfare training using active underwater acoustic sources. The Navy and National Marine Fisheries Service (NMFS) have developed science based protective and mitigation measures that adequately protect marine species while accommodating military readiness activities. The Navy continues to develop Environmental Impact Statements and obtain permits and authorizations for its range complexes to ensure military training complies with applicable laws and regulations. Litigation risks remain a concern, entailing the potential to delay or further restrict training, despite the protective and mitigation measures applied by the Navy in compliance with the MMPA and the ESA. Endangered species/critical habitat encroachment from the North Atlantic right whale has created avoidance areas that have resulted in some reduction of training days and prohibits certain training events. This area is relatively small in scope, however, if these types of restrictions were applied to other species/areas, there would be significant impacts to readiness through reduction in range access, segmentation of training/reduction in realism, limits on the application of new technologies, raised flight altitudes, reduced live fire proficiency, increased personnel tempo, and increased O&M costs. The Navy will continue to invest in marine mammal research; rely on scientifically valid empirical data results as basis of marine mammal mitigation development; factor mitigation effectiveness into permit requests and continue education of Fleet units to adhere to the maritime protective and mitigation measures and public education outreach efforts. Navy's authorizations under the MMPA and ESA include an adaptive management approach that includes continually evaluating existing mitigation measures for their potential impacts on training. If impacts on training from mitigation measures are identified and documented, Navy will raise these impacts with NMFS for resolution during an annual adaptive management review process.
	Mine Warfare (MW)	🟡	Same as above.
	Amphibious Warfare (AMW)	🟡	Same as above.
	Anti-Submarine (ASW)	🟡	Same as above.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Okinawa Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Airspace	Strike Warfare (STW)	●	When civil or commercial air traffic is routed through or strays into SUA, the SUA is partially or fully shut down. Okinawa air operations must cease or be delayed until the range is cleared, surface to unlimited. These restrictions create avoidance areas, segment training, reduce realism, prohibit certain training events, reduce range access, reduce live-fire proficiency; and delay operations until range clears. The Navy continues close coordination with Okinawa aviation controllers which helps to ameliorate the impacts of SUA incursion by non-military aircraft.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
Range Transients	Anti-Surface Warfare (ASUW)	●	The Okinawa government is increasing the pressure to return water space under W-173D to local fishermen for various types of fishing. Illegal fishing and seaweed harvesting in exclusive use areas can prohibit certain training events, reduce range access, create avoidance areas, and reduce training days. Operations are delayed until the fishermen depart the area. A bi-lateral agreement has been reached in Alliance Ad Hoc Working Group-Training for the Navy to release a portion of W173D water area to Okinawan fishermen, etc. as required under a Security Consultative Committee agreement. A modification of the Facilities Subcommittee document governing W173 is being modified to reflect this. The U.S. will notify the Okinawa Defense Bureau (ODB) following weekly scheduling meeting at JOSC when the water area in W173D will be open to fishermen. The Commander, Naval Forces Japan will create the notification process with ODB to be accomplished by the Commander, Fleet Activities Okinawa reps in the Joint Okinawa Scheduling Cell. The Government of Japan acknowledged their responsibility for ensuring areas provided to US Forces under SOFA are clear of "range foulers" during scheduled training. ODB will notify the Japanese Maritime Safety Agency and also coordinate with the local fishermen's associations, etc.
	Mine Warfare (MW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.

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Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Point Mugu Sea Range Complex Assessment Details

Range Mission Description

The NAVAIR Range Department provides for the safe and secure collection of decision-quality data for test and evaluation. The Point Mugu Sea Range is the DoD's largest and most extensively instrumented over-water range. Point Mugu is uniquely situated with a highly instrumented coastline and offshore islands, full-service militarty airfields, target and missile launch facilities, data collection and surveillance aircraft, and an experienced staff of technical personnel. The Point Mugu Sea Range supports Fleet training exercises, such as Joint Task Force Exercise (JFTEX) and target presentations.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
Strike Warfare	PMC	FMC	FMC		FMC	FMC	FMC	FMC	FMC				
Electronic Combat	FMC	FMC	FMC		FMC	FMC	FMC	FMC	FMC				
Anti-Air Warfare	FMC	FMC	FMC		FMC	FMC	FMC	FMC	FMC				
Anti-Surface Warfare		FMC	FMC		FMC	FMC	FMC	FMC	FMC				
Mine Warfare													
Amphibious Warfare	PMC	FMC	FMC		FMC	FMC	FMC	FMC	FMC				
Anti-Submarine		PMC	PMC	PMC									
Naval Special Warfare	PMC	FMC	FMC		FMC	FMC	FMC	FMC	FMC				
Expeditionary Warfare	PMC	FMC	FMC		FMC	FMC	FMC	FMC	FMC				

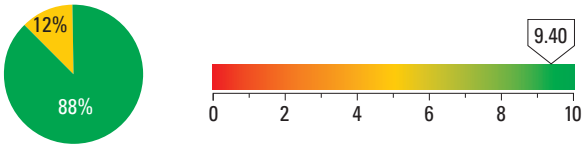
Legend: FMC PMC NMC

Encroachment Data

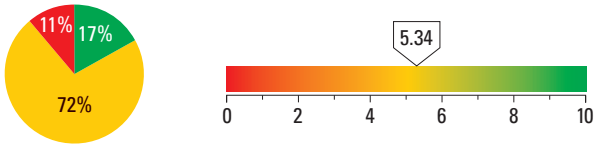
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Strike Warfare			Moderate	Minimal		Minimal				Moderate		
Electronic Combat			Moderate	Minimal								
Anti-Air Warfare	Moderate		Moderate	Moderate		Moderate				Moderate		
Anti-Surface Warfare	Moderate		Moderate	Moderate		Moderate				Moderate		
Mine Warfare												
Amphibious Warfare	Severe		Moderate	Moderate		Minimal				Moderate		
Anti-Submarine												
Naval Special Warfare	Severe		Moderate	Moderate		Minimal				Moderate		
Expeditionary Warfare	Severe		Moderate	Moderate								

Legend: Minimal Moderate Severe

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

Landspace remains the capability most impacted at this time, due to the fact that this is primarily an over-water range. Anti-submarine warfare is the mission area most impacted due to the fact that active SONAR is not supported or allowed on . No changes in capabilities are expected in the future.

Summary Observations

Three mission areas had high impact for a combined percentage of greater than 10% with moderate impacts making up greater than 72% of other areas. Some workarounds are available, though T&E species impacts are significantly increasing. The trend of moderate encroachment is expected to get worse over time for spectrum and workarounds may become more difficult. T&E Species and Spectrum are the encroachment factors that most impact the range's ability to perform its mission. T&E species consultations reduce the potential for rapid response RDT&E missions. Reduction of available spectrum assets due to reallocation of range frequency bands from government to non-government/ commercial usage, coupled with the sky-rocketing increases in massive, complex DoD wireless data transfer/networking requirements, will ensure more electromagnetic congestion, competition and conflict. Nearshore activities (e.g., amphibious, special warfare and expeditionary warfare) are most impacted by T&E species. Some workarounds are available at this time.

Point Mugu Sea Range Complex Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	9.68	9.32	9.61	9.61	9.61	**Encroachment Scores**	9.51	8.78	8.78	8.78	8.78
In 2010, the ratings were similar, but Anti-Submarine Warfare was not recognized as an impacted area.						Eight test mission areas had moderate impacts for a combined percentage of 33% in 2012. Workarounds were available at that time; however, the trend of moderate encroachment was expected to get worse over time for spectrum and workarounds may become more difficult. Spectrum is the encroachment factor that most impacted the range's ability to perform its mission. Reduction of available spectrum assets due to reallocation of range frequency bands from government to non-government/commercial usage, coupled with the sky-rocketing increase in massive, complex DoD wireless data transfer/networking requirements, will ensure more electromagnetic congestion, competition and conflict. Air and Sea Combat were the mission areas with the most moderate impacts (5 Yellow). Workarounds were available at the time.					

Point Mugu Sea Range Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strike Warfare (STW)	🟡	One location on San Nicolas Island is the only land impact area on Point Mugu Sea Range and only for inert ordnance. This provides for only limited realistic training. There is no planned or feasible action to remedy the situation.
	Amphibious Warfare (AMW)	🟡	There are limited areas on San Nicolas Island and Point Mugu where this type of training can occur and only within limited seasons. This limits realistic training. There is no planned action to remedy the situation.
	Naval Special Warfare (NSW)	🟡	There are limited areas on San Nicolas Island and Point Mugu where this type of training can occur and only within limited seasons. Underwater detonations are not allowed. This limits realistic training. There is no planned action to remedy the situation.
	Expeditionary Warfare (EXW)	🟡	There are limited areas on San Nicolas Island and Point Mugu where this type of training can occur and only within limited seasons. Underwater detonations are not allowed. This limits realistic training. There is no planned action to remedy the situation.
Airspace	Anti-Submarine (ASW)	🟡	Active SONAR is not allowed on the Sea Range. This limits realistic training. There is no planned action to remedy the situation.
Seaspace	Anti-Submarine (ASW)	🟡	Same as above.
Underseaspace	Anti-Submarine (ASW)	🟡	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Threatened & Endangered Species	Anti-Air Warfare (AAW)	🟡	The presence of T&E species and critical habitat at Point Mugu and San Nicolas Island (SNI) requires significant mitigation effort and potential new permitting to support testing activities. The range needs to implement SNI INRMP requirements and seek statutory exemption for sea otters.
	Anti-Surface Warfare (ASUW)	🟡	Same as above.
	Amphibious Warfare (AMW)	🔴	Same as above.
	Naval Special Warfare (NSW)	🔴	Same as above.
	Expeditionary Warfare (EXW)	🔴	Same as above.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

Point Mugu Sea Range Complex Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Spectrum	Strike Warfare (STW)	●	Reduction of available spectrum, coupled with the increase in spectrum requirements, limits the ability to schedule certain types of events and many concurrent activities. Coordination at the local level to deconflict when possible is effective. Users must work through the chain of command and Range Commanders Council to address spectrum requirements at the national level.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.
	Expeditionary Warfare (EXW)	●	Same as above.
Maritime Sustainability	Anti-Air Warfare (AAW)	●	Marine mammals and commercial shipping are present at Point Mugu. Testing that involves releasing military expendable materials into the water can only be conducted when the range is clear of marine mammals. Increasing numbers of marine mammals will likely cause increased impacts and delays to operations. Presence of commercial ships can delay or disrupt operations. The Navy adheres to standard marine mammal monitoring procedures and continues to document lack of impact from military operations on Point Mugu and work with regulators to change requirements. The Navy will continue to work with shipping industry and regulators to minimize shipping impacts.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.
	Expeditionary Warfare (EXW)	●	Same as above.
Air Quality	Anti-Air Warfare (AAW)	●	California Air Resources Board (CARB) regulations require ships to burn low-sulfur fuel within 24 nautical miles of the mainland and offshore islands. Vessel traffic initially increased through Point Mugu, with a significant potential to disrupt, delay, or cause cancellations to operations. CARB revised the initial regulation and some ships have returned to historic patterns. The overall trend, however, is not improving. Navy continues to track shipping traffic and work with CARB, the shipping industry, and other agencies to ensure they understand the importance of Point Mugu and potential for impacts.
	Anti-Surface Warfare (ASUW)	●	Same as above.
Water Quality/ Water Supply	Strike Warfare (STW)	●	There are restrictions on discharge from the reverse osmosis water purification system that provides potable water to San Nicolas Island. The number of people that can be on SNI to support testing is limited by the water supply. Navy continues to work with regulators to modify the discharge permit.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.

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Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

SOCAL Assessment Details

Range Mission Description

The SOCAL Range Complex mission is to support Navy training in all Navy mission areas, at all levels of training. The Complex is a state-of-the-art, multi-warfare, integrated training facility serving a wide variety of customers with primary mission requirements to provide support at all levels of training: basic, intermediate, and advanced. The Range Complex conducts a multitude of operations including multi-warfare and battle group evolutions, with principal training conducted on, around, and in the air space around San Clemente Island. While the majority of the scenarios are designed to support forces assigned to the Commander of Third Fleet, other events are also conducted which facilitate the test, evaluation, and development of weapon systems and tactics.

Capability Data

Mission Areas	Capability Attributes												
	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
Strike Warfare	PMC	FMC	FMC	FMC	PMC	PMC	PMC		PMC				
Electronic Combat	FMC	FMC	FMC	FMC	PMC	PMC	PMC		PMC				
Anti-Air Warfare	FMC	FMC	FMC		NMC	PMC	PMC		PMC				
Anti-Surface Warfare		FMC	FMC	FMC	FMC	PMC	PMC		PMC				
Mine Warfare		FMC	FMC	PMC	PMC	FMC	PMC		PMC				
Amphibious Warfare	PMC	FMC	FMC	FMC	PMC	FMC	PMC		PMC				
Anti-Submarine		FMC	FMC	FMC	PMC	PMC	NMC		FMC				
Naval Special Warfare	PMC	FMC	FMC	FMC	FMC	PMC	PMC		PMC				
Expeditionary Warfare	PMC	FMC	FMC	FMC	FMC	FMC	PMC		FMC				

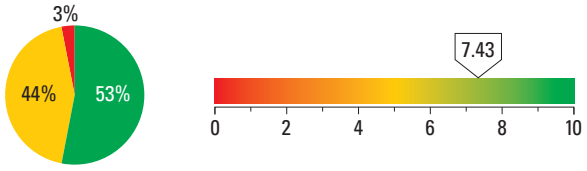
Legend: FMC PMC NMC

Encroachment Data

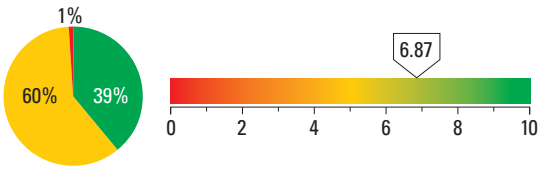
Mission Areas	Encroachment Factors											
	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Strike Warfare	Moderate	Moderate	Moderate		Minimal	Minimal	Minimal	Minimal	Moderate	Minimal	Minimal	Minimal
Electronic Combat			Moderate	Minimal	Minimal	Minimal	Minimal	Minimal				Minimal
Anti-Air Warfare			Moderate		Minimal	Minimal	Minimal	Minimal				Minimal
Anti-Surface Warfare			Moderate	Moderate	Minimal	Minimal			Minimal			Moderate
Mine Warfare	Moderate	Moderate	Moderate	Moderate	Moderate	Minimal	Moderate	Moderate	Minimal	Moderate	Moderate	Moderate
Amphibious Warfare	Moderate	Moderate	Moderate	Moderate	Moderate	Minimal	Moderate	Moderate	Severe	Moderate	Moderate	Moderate
Anti-Submarine			Moderate	Moderate	Minimal	Minimal			Minimal			Minimal
Naval Special Warfare	Moderate	Moderate	Moderate	Moderate	Moderate	Minimal	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Expeditionary Warfare	Moderate		Moderate	Moderate	Minimal	Minimal	Moderate	Moderate	Minimal	Moderate	Moderate	Moderate

Legend: Minimal Moderate Severe

Capability Chart and Scores



Encroachment Chart and Scores



SOCAL Assessment Details

Summary Observations	Summary Observations
The capability attributes most impacting range mission performance are Targets and Scoring & Feedback Systems. The mission areas most severely impacted: ASW, AMW, NSW, MW (MIW). The limitations with Targets and Scoring & Feedback Systems are long-standing. The Navy continues to pursue solutions that improve and modernize the systems to reduce capability shortfalls. Note on NSW Assessments: Assessments of NSW training are based on actual NSW demand and use of training range capability and space. Actual Training range capability and space requirements are based on Fleet Readiness Training Plan demands for conventional warfare areas.	Spectrum is the encroachment factor having the most effect on training. The frequency bandwidth of 1750–1780 was recently sold; the DoD transition from 1750–1780 will begin in September and is planned to be complete by December of 2014. The reduction of available frequency spectrum precludes comprehensive employment of combat systems and sensors, specific training activity systems, and Command & Control and safety networks. Threatened & Endangered Species/Critical Habitat avoidance or minimization measures also marginalizes operations to the extent that the operations continue, but cause the use of alternate standards and methods. All mission areas are affected by encroachment. Encroachment impacts are long-standing and are continually being addressed through NEPA actions and training procedures and protocols. The Navy continues to consult with stakeholders with the expectation that encroachment restrictions will be lessened. Note on NSW Assessments: Assessments of Navy Special Warfare (NSW) training are based on actual NSW demand and use of training range capability and space. Actual Training range capability and space requirements are based on Fleet Readiness Training Plan demands for conventional warfare areas.

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Capability Scores	6.67	6.75	6.75	6.92	7.33

ASW Underseaspace in 2008 was reassessed from Red to Yellow in 2009 and forward. Assessment of the impact was revised to more consistently reflect similar impacts in other range complexes. MIW Targets and Scoring & Feedback Systems changed from Red to Yellow for 2012. Installation of fixed targets at Imperial Beach and Tanner Bank will provide rudimentary target support to MIW forces and Instrumentation equipment has been procured for the planned MIW training range installation at Tanner Bank. The instrumentation system will primarily support submarine training. Range support changed from Yellow to Green for all warfare areas to reflect deployment and use of the Data Collection and Scheduling Tool (DCAST). AMW landspace and targets changed from Red to Yellow to reflect ability for amphibious forces to conduct battalion-level operations on SCI, to include all phases of MEU employment with the exception of overcoming beach obstacles and defenses.

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Encroachment Scores	9.06	8.57	8.15	7.27	7.27

Encroachment assessments for CY2008 were different than for CY2009, 2010, and 2011. The algorithm for the overall assessment score for 2009– 2011 was revised from the original algorithm used in 2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009, 2010, and 2011 provide a more accurate assessment of encroachment. Since the CY2009 assessment, Mine Warefare (MIW) assessment for Noise Restrictions was increased from Green to Red; and Adjacent Land Use was changed from Green to Yellow due to MIW and public use concerns. In addition, State Historic Preservation Office (SHPO) has restricted placement of targets on Shore Bombardment Area (SHOBA) impact areas, changing the rating for Cultural Resources/Strike Warfare (STW) from Green to Yellow. Vernal pool fairy shrimp habitat restricts use of portions of Silver Strand Training Complex (SSTC) South, changing the rating for Wetlands/MIW and Amphibious Warfare (AMW) from Green to Yellow. These assessment changes resulted in an assessment score change from CY2009 to CY2010 to CY2011. Since the CY2013 submittal, considerable review and coordination on encroachment issues in the SOCAL Range Complex has occurred between the SOCAL RCMP revision, NAVBASE Coronado Encroachment Action Plan updates, and initiation of the SOCAL OPAREA Encroachment Action Plan. Key changes to this CY2014 revision include: designation of Yellow across most warfare areas for Spectrum and T&E Species; change to Yellow for many warfare areas in Marine Sustainability due to sonar and Underwater Demolition (UNDET) measures from Hawaii Southern California Training and Testing EIS (HSTT EIS); change of Green to Yellow for MIW and Expeditionary Warfare (EXW) airspace due to use of helicopters in SSTC; designation of Green for Air Quality in Anti-Surface Warfare (ASUW), MIW, AMW, and Anti-Submarine Warfare (ASW); change in Red to Yellow for Noise Restrictions for EXW and Naval Special Warfare (NSW) due to change in demolition training requirements in SOCAL; and designation of Yellow for Water Quality for MIW, AMW, EXW, and NSW due to Tijuana River pollution impacts on coastal SSTC waters. There is little indication that major encroachment pressures will change substantially in the foreseeable future.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

SOCAL Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strike Warfare (STW)		The range cannot support two separate concurrent strikes and use of live ordnance is limited to specific areas of the range complex. This reduces realism; inhibits new tactics development; limits application of new weapon technologies; reduces live fire proficiency; increases personnel optempo; and increases O&M costs. There is no solution except to use other ranges. No completion date identified.
	Amphibious Warfare (AMW)		SCIRC land area for AMW is limited due to lack of accessible beaches for amphibious landings and land area for tracked vehicle maneuvers. SSTC land use for AMW is limited to individual and basic level training; larger MPF amphibious events are conducted but no Joint Logistics Over the Shore (JLOTS) are currently conducted. Completion of the soil erosion, UXO clearance, and funding cultural resources surveys and mitigation will resolve SCIRC tracked vehicle maneuver areas. For larger amphibious operations on SSTC, more extensive public outreach and additional space on other installations will need to be coordinated as there is not enough beach space to accommodate of components of a JLOTS, including tent camp, laid down areas, and maneuver areas.
	Naval Special Warfare (NSW)		The range has limited maneuver area and limited beach front areas. The range supports basic level training, but additional land is required for more advanced training. This reduces realism; inhibits new tactics development; limits application of new weapon technologies; reduces live fire proficiency; increases personnel optempo; and increases O&M costs. A solution will be proposed and considered in the POM process.
	Expeditionary Warfare (EXW)		SCIRC land area for EXW is limited due to lack of established bivouac area and off-road maneuver areas. NSW and EOD MCM demolition requirements have been modified for SOCAL. NSW will not conduct demolition or UNDETs on the SSTC. EOD demo pit requirements require a facility to be within 60 miles of Metro San Diego. Implementation of the soil erosion measures, UXO clearance, and funding cultural resources surveys will resolve SCIRC limitations. A solution will be proposed and considered in the POM process.
Underseaspace	Mine Warfare (MW)		Minefield training in shallow water through the surf zone that supports live firing of MCM systems and EOD ordnance and mechanical cutters is available, albeit without mine shape instrumentation. The availability of a fully instrumented Very Shallow Water (VSW) MIW range is critical to the EOD mission in support of both MIW and AMW. Lack of Shallow Water Test Range (SWTR) instrumentation reduces realism, inhibits new tactics development, and limits application of new weapon technologies. The range will develop a fully instrumented VSW mine training area that supports all facets of EOD MCM training and other emergent MCM systems. No completion date identified.
Targets	Strike Warfare (STW)		The range has no moving targets, limited number of structural targets, and inadequate Designated Mean Point of Impact at each site. This reduces realism; inhibits new tactics development; limits application of new weapon technologies; reduces live fire proficiency; increases personnel optempo; and increases O&M costs. A solution will be proposed and considered in the POM process.
	Electronic Combat (EC)		The range has no visually significant targets and live ordnance is not allowed. This reduces realism, inhibits new tactics development, limits application of new weapon technologies, reduces live fire proficiency, increases personnel optempo, and increases O&M costs. A solution will be proposed and considered in the POM process.
	Anti-Air Warfare (AAW)		Southern California Offshore Range (SCORE) has no supported Aerial Target Command and Control (C&C) capability and cannot support BQM-74 target operations until installation of Standard Navy Target Control (SNTC) system. Lack of C&C increases Fleet Training costs (SYSCOM range use mandated) which inhibits new tactics development and restricts application of new weapon technologies. A solution will be proposed and considered in the POM process.
	Mine Warfare (MW)		Imperial Beach Minefield is a shallow water minefield and a mid-depth (and deep-water) minefield on Tanner Bank that contains respectively, 38 to 40 non-instrumented, threat-representative shapes in specified field configurations in support of emergent MIW (mine hunting, influence sweeping) training. Both fields contain bottom and tethered mine shapes in accordance with Submarine Force US Pacific Fleet (SUBPAC) and Naval Mine and Anti-Submarine Warfare Command (NMAWC) requirements. However, due to excessive costs (i.e. versatile exercise mine), the minefields do not contain instrumented mine shapes. The lack of instrumented targets inhibits new tactics development, reduces training proficiency, and limits application of new weapon technologies. Lack of responsive instrumentation reduces realism of training by lack of opposition. The SOCAL Working Group prioritized establishing fixed MCM training ranges in SOCAL and retained proposals for instrumented shapes as part of out-year planning. A solution will be proposed and considered in the POM process.
	Amphibious Warfare (AMW)		The required target types are not all available to this range, specifically beach obstacles and beach defenses. This reduces realism; inhibits new tactics development; limits application of new weapon technologies; reduces live fire proficiency; increases personnel optempo; and increases O&M costs. A solution will be proposed and considered in the POM process.
	Anti-Submarine (ASW)		Current MK-30 Mod 1 and MK-39 EMATT targets do not provide accurate response to AN/AQS-22 or AN/SQQ89 ASW Combat System sonar waveforms. Neither the MK-30 Mod 1 or MK-39 EMATT possess the capability of representing a dynamically maneuvering threat submarine. MK-30 Mod 1 units are approaching the end of service lifetime and the Mk 30 mod 2 program was cancelled in 2012, whereby, limiting target availability and degrading ASW/USW unit level through integrated training. Lack of realistic ASW targets reduces realism; limits use of new technologies. A solution will be proposed and considered in the POM process.

SOCAL Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Threats	Strike Warfare (STW)	🟡	There is no dedicated threat aircraft and threats are not available in required quantity. Limited UAS OPFOR for track; no capability for engage or Blue UAS over-watch training. EC threats are not available above level 2. There is no capability for virtual threat aircraft. This reduces realism; inhibits new tactics development; limits application of new weapon technologies; reduces live fire proficiency; increases personnel optempo; and increases O&M costs. A solution will be proposed and considered in the POM process.
	Electronic Combat (EC)	🟡	Realistic OPFOR responses are not available and EC threats are not available above level 2. This reduces realism; inhibits new tactics development; limits application of new weapon technologies; reduces live fire proficiency; increases personnel optempo; and increases O&M costs. A solution will be proposed and considered in the POM process.
	Anti-Air Warfare (AAW)	🟡	The range has no dedicated threat aircraft and threats are not available in required quantity. Limited UAS OPFOR for track and no capability to engage for Blue UAS Over-watch training. This reduces realism; inhibits new tactics development; limits application of new weapon technologies; reduces live fire proficiency; increases personnel optempo. and increases O&M costs. A solution will be proposed and considered in the POM process.
	Anti-Surface Warfare (ASUW)	🟡	There is no dedicated air or surface threat capability in required numbers. Electronic Combat (EC) threats are not available above level 2; and command and control capability for OPFOR does not meet requirements. Limited UAS OPFOR for track with no capability for engaging multiple threats. This reduces realism, inhibits new tactics development, limits application of new weapon technologies, reduces live fire proficiency, increases personnel optempo, and increases O&M costs. A solution will be proposed and considered in the POM process.
	Anti-Submarine (ASW)	🟡	The range has no dedicated threat aircraft, submarines, or surface ships; threats are not available in required quantity. EC threats not available above level 2. There is no capability for virtual threat aircraft. This reduces realism; inhibits new tactics development; limits application of new weapon technologies; reduces live fire proficiency. and increases personnel optempo; increases O&M costs. A solution will be proposed and considered in the POM process.
	Naval Special Warfare (NSW)	🟡	The range has no live, virtual, or constructive threat ground force. Limited UAS OPFOR for track; no capability for engaging multiple threats. This reduces realism, inhibits new tactics development limits application of new weapon technologies, reduces live fire proficiency, increases personnel optempo, and increases O&M costs. A solution will be proposed and considered in the POM process.
Scoring & Feedback System	Strike Warfare (STW)	🟡	There is no Modeling & Simulation capability and no scoring capabilities as mandated in the Required Capabilities Document (RCD). This reduces realism, inhibits new tactics development, limits application of new weapon technologies reduces live fire proficiency, increases personnel optempo, and increases O&M costs. A solution will be proposed and considered in the POM process.
	Electronic Combat (EC)	🟡	Same as above.
	Anti-Air Warfare (AAW)	🟡	Same as above.
	Anti-Surface Warfare (ASUW)	🟡	Same as above.
	Mine Warfare (MW)	🟡	There are no instrumented training mine shapes employed in SOCAL minefields; all shapes are inert. The Tanner Bank minefield instrumentation needs repair. The range should replace the Tanner Bank minefield instrumentation and procure instrumented targets for the remaining minefields.
	Amphibious Warfare (AMW)	🟡	There is no M&S capability and no scoring capabilities as mandated in the Required Capabilities Document (RCD). This reduces realism, inhibits new tactics development, limits application of new weapon technologies reduces live fire proficiency, increases personnel optempo, and increases O&M costs. A solution will be proposed and considered in the POM process.
	Anti-Submarine (ASW)	🔴	Absent in-water track and communication capability on the nearshore shelf and offshore Tanner/Cortez Banks in the SCIRC, SCORE cannot support (track and score) ASW operations in littoral and shallow water. This reduces realism, inhibits new tactics development limits application of new weapon technologies, and restricts proficiency. A solution will be proposed and considered in the POM process.
	Naval Special Warfare (NSW)	🟡	There is no M&S capability and no scoring capabilities as mandated in the Required Capabilities Document (RCD). This reduces realism, inhibits new tactics development, limits application of new weapon technologies reduces live fire proficiency, increases personnel optempo, and increases O&M costs. A solution will be proposed and considered in the POM process.
	Expeditionary Warfare (EXW)	🟡	Same as above.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

SOCAL Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Range Support	Strike Warfare (STW)	●	There is a need to expand the current SCI Range Coordination Center (RCC) to a full-time, appropriately staffed, on-island range control/operations center under SCORE that is responsible for the proactive control and real-time schedule management of the SCIRC's ranges, training areas, airspace, and sea space as mandated by CPF (CINCPACFLT 112353Z FEB 00 [SCI Operational Control]). Particular emphasis should be placed on ground-based live fire operations, unit-level UAS operations, KRAKEN, and organizations that fall outside of normal SCORE scheduling and operational support. Escalating training demands, coupled with existing long-term training requirements, demand that a full time (24/7) SCI RCC be stood up. An unacceptable number of close calls between live fire operations and military and non-military personnel represent a mounting concern on the sustained use of SCI for an ever-increasing number and complexity of training events and live fire activities. A solution will be proposed and considered in the POM process.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	There is a requirement for persistent, on-island range control of SCI ranges and training areas. SCORE provides some aspects of range control through their scheduling process. SCORE is not resourced or chartered to provide access control or physical security to the island and ranges and training areas. While there is operational authority in place to SCORE for SCI, changes in Navy structure significantly impede SCORE's ability to provide required oversight and coordination. SCI will stand up an interim RCC capability in August 2013. Lack of range control on SCI and its ranges and training areas exacerbates safety concerns, reduces range efficiency, and restricts range usage data collection requirements. SOCAL/NOCAL Fleet Project Team consensus was reached (Aug 2011) on the requirement for a centralized RCC for SCI. A solution will be proposed and considered in the POM process.
	Mine Warfare (MW)	●	The lack of instrumentation within shallow water minefields precludes MW range instrumentation and underwater communications. Lack of minefield instrumentation reduces realism, inhibits new tactics development, and limits application of new weapon technologies. A solution will be proposed and considered in the POM process.
	Amphibious Warfare (AMW)	●	Same as ASUW.
	Naval Special Warfare (NSW)	●	There is a need to expand the current SCI Range Coordination Center to a full-time, appropriately staffed, on-island Range Control/Operations Center under SCORE that is responsible for the proactive control and real-time schedule management of the SCIRC's ranges, training areas, airspace, and sea space as mandated by CPF (CINCPACFLT 112353Z FEB 00 [SCI Operational Control]). Particular emphasis should be placed on ground-based live fire operations, unit-level UAS operations, KRAKEN, and organizations that fall outside of normal SCORE scheduling and operational support. Escalating training demands, coupled with existing long-term training requirements, demand that a full time (24/7) SCI Range Control Center be stood up. An unacceptable number of close calls between live fire operations and military and non-military personnel represent a mounting concern on the sustained use of SCI for an ever-increasing number and complexity of training events and live fire activities. A solution will be proposed and considered in the POM process.

SOCAL Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Strike Warfare (STW)	●	The presence of T&E species and critical habitat in SOCAL has an impact on training as they restrict target area access, segment training, and increase range support requirements. It requires significant mitigation effort to support training activities. The Navy plans to release INRMP updates in CY2014, continue mitigations, and update the Environmental Impact Statement/Biological Opinion (EIS/BO).
	Mine Warfare (MW)	●	The presence of T&E species restricts Explosives Ordnance Disposal (EOD) and Mine Warfare (MIW) demolition on Silver Strand Training Complex (SSTC) beaches. It requires significant mitigation to support training activities. The Navy plans to release INRMP updates in CY2014, continue mitigations, and update the EIS/BO.
	Amphibious Warfare (AMW)	●	Fire restrictions and species protection affect activities at the San Clemente Island Range Complex (SCIRC). Restriction on controlled burns (BO FWS-LA-09B0027-09F0040) limits Navy's ability to deal with island-wide unexploded ordnance (UXO), cactus and exotic grasses. Dense grasses and cactus prevent operational range clearance and range personnel from accessing target areas. Loggerhead shrike and the San Clemente sage sparrow limit training opportunities on San Clemente Island. California least tern, western snowy plover, and San Diego fairy shrimp presence on the beaches of SSTC create avoidance areas. Species restrictions create avoidance areas, prohibit certain training events, segment training/reduce realism, limit application of new technologies, and inhibit new tactics development. SCIRC operations must be conducted during times of reduced fire potential and in areas where species are not prevalent. A draft San Clemente Island (SCI) Operational Range Clearance Plan is in development and a need for associated Environmental Assessment addressing island-wide, controlled burns has been identified.
	Naval Special Warfare (NSW)	●	Military working dog (MWD) restrictions and species protection affect activities at the SCIRC and SSTC. MWD are required to meet specific kennel, working area, transport, and health certification requirements provided in SCIINST 5585.2. The SCI Island fox is susceptible to diseases and parasites from dogs. MWD on SSTC are required to remain 30m outside of western snowy plover buffer areas for nests and have restricted exercise areas on SSTC-N until completion of a study to evaluate the effects of military working dogs on terns and plovers is complete. Over the Beach (OTB) activities at SSTC-S can occur year-round with a platoon of personnel and one dog. USFWS designated the land areas around the only maritime SOUC (Special Operations Urban Complex -MOUT) for NSW as medium to poor SCI sage sparrow habitat. Per BO 1-6-00-F-19 (2001), NSW has paid for sage sparrow monitoring around the SOUC. The 2008 USFWS BO extended this monitoring commitment indefinitely but to date, USFWS does not have a recovery plan for SCI sage sparrow (listed as threatened species August 11, 1977 (42 Federal Register 40682)). SCI BO terms and conditions contains restrictions on ordnance use, and insertions and extractions encircling the SOUC. These restrictions reduce access to training ranges; inhibit new tactics development for NSW in state-of-the-art, real-world urban training environment, including Improvised Explosive Device (IED), Close Quarter Combat (CQC), Close Quarter Defense (CQD) training. In absence of a US Fish and Wildlife Service (USFWS) Recovery Plan for SCI sage sparrows, operational restrictions on NSW SOUC training (insertion and extractions) and requirements to fund monitoring activities will continue indefinitely; therefore the Navy is considering requesting legislative relief for military training operations on SCI.
	Expeditionary Warfare (EXW)	●	The presence of T&E species and critical habitat at SOCAL has an impact on training. It requires significant mitigation effort to support training activities. The Navy plans to release INRMP updates in CY2014, continue mitigations, and update the EIS/BO.
Munitions Restrictions	Strike Warfare (STW)	●	There are munitions restrictions on SHOBA that affect related training activity. SHOBA users must restrict munitions use to approved types, amounts, and expenditure locations. Munitions restrictions create avoidance areas, prohibit certain training events, segment training/reduce realism, limit application of new technologies, and inhibit new tactics development. Operations involving munitions must be conducted during times of reduced fire potential and in areas where species are not prevalent. There is currently no planned remediation.
	Mine Warfare (MW)	●	There are munitions restrictions in SSTC bay training areas (max 15 grams NEW). SSTC users must restrict munitions use to approved types, amounts, and expenditure locations. Munitions restrictions create safety buffer zones, avoidance areas, prohibit certain training events, segment training/reduce realism, limit application of new technologies, and inhibit new tactics development. There is currently no planned remediation. SSTC operations involving munitions are not conducted in areas where marine mammals, sea birds, and sea turtles are present.
	Amphibious Warfare (AMW)	●	There are munitions restrictions on SHOBA and SSTC that affect related training activity. SHOBA users must restrict munitions use to approved types, amounts, and expenditure locations. Operations involving munitions must be conducted during times of reduced fire potential and in areas where species are not prevalent. Munitions restrictions create avoidance areas, prohibit certain training events, segment training/reduce realism, limit application of new technologies, and inhibit new tactics development. There is currently no planned remediation. SSTC conforms to restrictions on small arms blanks and simulator expenditures and to prohibitions on land detonations.
	Naval Special Warfare (NSW)	●	Same as above.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

SOCAL Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Spectrum	Strike Warfare (STW)	●	Employment of Link 16 is restricted. Years ago frequencies from 1700–1800 were sold and pressure remains from outside sources to sell more. Data calls are sent out to the Fleet to assess impacts. There are 120 frequencies for trunk radios in SOCAL - all of them are constantly in use. This prevents any further sale of frequency spectrum for use with upcoming operations to include RDT&E and UAV operations restrictions limit spectrum operations and prohibit certain training events that require combat and range support systems operating in encroached frequencies, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief and to develop encroachment strategies that will reduce encroachment while ensuring pending use of emerging spectrum technologies. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations. The frequency bandwidth of 1750–1780 was recently sold and DoD transition from 1750–1780 will begin September and is planned to be complete by December of 2014.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.
	Expeditionary Warfare (EXW)	●	Same as above.

SOCAL Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Maritime Sustainability	Anti-Surface Warfare (ASUW)	●	Maritime protective and mitigation measures undertaken in compliance with regulatory requirements have resulted in training restrictions that reduce training flexibility and ultimately reduce training realism. All at-sea training is impacted to some degree; impacts are most significant to integrated warfare training using active underwater acoustic sources. The Navy and National Marine Fisheries Service (NMFS) have developed science based protective and mitigation measures that adequately protect marine species while accommodating military readiness activities. The Navy continues to develop Environmental Impact Statements and obtain permits and authorizations for its range complexes to ensure military training complies with applicable laws and regulations. Litigation risks remain a concern, entailing the potential to delay or further restrict training, despite the protective and mitigation measures applied by the Navy in compliance with the MMPA and the ESA. Endangered species/critical habitat encroachment from the North Atlantic right whale has created avoidance areas that have resulted in some reduction of training days and prohibits certain training events. This area is relatively small in scope, however, if these types of restrictions were applied to other species/areas, there would be significant impacts to readiness through reduction in range access, segmentation of training/reduction in realism, limits on the application of new technologies, raised flight altitudes, reduced live fire proficiency, increased personnel tempo, and increased O&M costs. The Navy will continue to invest in marine mammal research; rely on scientifically valid empirical data results as basis of marine mammal mitigation development; factor mitigation effectiveness into permit requests and continue education of Fleet units to adhere to the maritime protective and mitigation measures and public education outreach efforts. Navy's authorizations under the MMPA and ESA include an adaptive management approach that includes continually evaluating existing mitigation measures for their potential impacts on training. If impacts on training from mitigation measures are identified and documented, Navy will raise these impacts with NMFS for resolution during an annual adaptive management review process.
	Mine Warfare (MW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Maritime protective and mitigation measures undertaken in compliance with regulatory requirements have resulted in training restrictions that reduce training flexibility, force segmented training, and ultimately reduce training realism. Amphibious landings on SSTC must consider and avoid major grunion spawns on SSTC beaches in April and May. Endangered species/critical habitat encroachment has created avoidance areas that have resulted in some reduction of training areas on SSTC and SCIRC. This area is relatively small in scope, however, if these types of restrictions were applied to other species/areas, there would be significant impacts to readiness through reduction in range access, segmentation of training/reduction in realism, limits on the application of new technologies, raised flight altitudes, reduced live fire proficiency, increased personnel tempo, and increased O&M costs. The Navy will continue to invest in fish habitat research on SSTC and monitor grunion spawns and factor mitigation effectiveness into permit requests. The Navy will also continue education of fleet units to adhere to the maritime protective and mitigation measures and public education outreach efforts.
	Anti-Submarine (ASW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.
	Expeditionary Warfare (EXW)	●	Same as above.
Airspace	Mine Warfare (MW)	●	Helicopters supporting SSTC amphibious operations compete with multiple airspace users on the SSTC, including military aircraft training, law enforcement, commercial, and private aircraft. Multiple airspace users and congested airspace on the SSTC prohibits certain training events, reduces range access, reduces realism, inhibits tactics development, and limits application of new technologies. The Navy continues coordination with Navy air traffic controllers and public stakeholders to educate on matters of SSTC training.
	Amphibious Warfare (AMW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

SOCAL Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Noise Restrictions	Mine Warfare (MW)	🟡	NSW and EOD Mine Counter Measures (MCM) demolition requirements have been modified for SOCAL. NSW will not conduct demolition or UNDETs on the SSTC due to noise and explosive weight restrictions. Noise abatement hours for Naval Base Coronado (NBC) are 2200–0700, restricting use of weapon blanks, pyrotechnics, and grenade simulators during night operations. Encroachment from noise restrictions creates avoidance areas, prohibits certain training events, reduces range access, reduces realism, inhibits tactics development, and limits application of new technologies.
	Amphibious Warfare (AMW)	🟡	Helicopter noise from SSTC amphibious training activities impacts surrounding communities and limits expansion of helicopter supported training. Multiple airspace users and congested airspace on the SSTC prohibits certain training events, reduces range access, reduces realism, inhibits tactics development, and limits application of new technologies. The Navy continues coordination with Navy air traffic controllers and public stakeholders to educate on matters of SSTC training.
	Naval Special Warfare (NSW)	🟡	NSW and EOD MCM demolition requirements have been modified for SOCAL. Noise abatement hours for NBC are 2200–0700, restricting use of weapon blanks, pyrotechnics, and grenade simulators during night operations. Encroachment from noise restrictions creates avoidance areas, prohibits certain training events, reduces range access, reduces realism, inhibits tactics development, and limits application of new technologies.
	Expeditionary Warfare (EXW)	🟡	Noise abatement hours for NBC are 2200–0700, restricting use of weapon blanks, pyrotechnics, and grenade simulators during night operations. Encroachment from noise restrictions creates avoidance areas, prohibits certain training events, reduces range access, reduces realism, inhibits tactics development, and limits application of new technologies. A noise abatement waiver for SSTC is being considered by NBC with appropriate justification.
Adjacent Land Use	Mine Warfare (MW)	🟡	Concerns about public usage of beaches adjacent to Navy training areas as well as the impact of noise on the adjacent community on Silver Strand has led to reduced intensity of training and training realism. Usage and noise concerns create avoidance areas, prohibit certain training events, reduce range access, reduce realism, inhibit tactics development, and limit application of new technologies. The Navy continues coordination with public stakeholders to educate them on matters of SSTC training.
	Ambitious Warfare (AMW)	🟡	Same as above.
	Naval Special Warfare (NSW)	🟡	Same as above.
	Expeditionary Warfare (EXW)	🟡	Same as above.
Cultural Resources	Strike Warfare (STW)	🟡	Cultural resources on the SHOBA affect STW target placement (impact areas 1 and 2) and expansion of Adversary Village (impact area 1). Cultural resources encroachment creates avoidance areas, reduces range access, reduces realism, inhibits tactics development. There is collaboration between the Navy and Advisory Council on Historic Preservation/ California State Historic Preservation Office (ACHP/CASHPO) on the development of the Integrated Cultural Resources Management Plan ICRMP description of a modeling study to address Section 106 compliance in the impact areas.
	Amphibious Warfare (AMW)	🔴	SCI is the only maritime training area that can support I MEF Battalion Landings, tactical tracked vehicle insertions and live fire targeting. The preponderance of the potential archaeological sites identified on SCI lack definitive eligibility determination, resulting in a reduction in the use of available training areas. Presence of archaeological sites in the Assault Vehicle Maneuver Areas (AVMAs) and SHOBA restricts tracked vehicle and howitzer maneuvers. The Navy has completed the Erosion Control Plan (FWS-LA-09B0027-09R0040, AVMC-M-3). Once adopted, funded and field measures are implemented by USMC the AVMC training can proceed. All sites are treated as if eligible under the NHPA. In absence of eligibility determination, over 7,000 potential sites and associated landmass create avoidance areas throughout maneuver spaces designated in the SOCAL EIS/OEIS as the USMC AVMA, Artillery Firing Positions (AFP), and Assault Maneuver Positions (AMP). A solution will be proposed and considered in the POM process. The range intends to complete funding and implementation of the Erosion Control Plan.
	Naval Special Warfare (NSW)	🟡	The presence of archaeological sites restrict NSWG-1 and NSWC tactical training at SCI. SWAT 1 contains the only maritime SOUC (special operations urban complex). SCI supports the only location for BUD/S Third Phase training. Cultural resources created an avoidance area that resulted in lost range access and tactical training development. A solution will be proposed and considered in the POM process.

SOCAL Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Water Quality/ Supply	Mine Warfare (MW)	●	Water pollution from the Tijuana River degrades water quality of coastal SSTC training areas, limiting use of areas for in-water training by MW, AMW, EXW, or NSW training. Hazardous water quality conditions create an avoidance area that results in lost range access and tactical training development. The range plans to ensure that pollution issue and impacts to Navy training are brought to the attention of lawmakers and regulators. The range will partner with Tijuana Estuary on clean up efforts and develop guidelines and criteria for training operations or closing the beach due to water quality.
	Amphibious Warfare (AMW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.
	Expeditionary Warfare (EXW)	●	Same as above.
Wetlands	Mine Warfare (MW)	●	Vernal pool fairy shrimp habitat restricts use of portion of SSTC South for troop maneuvers. Habitat encroachment creates avoidance areas, prohibits certain training events, reduces range access, reduces realism, inhibits tactics development, and limits application of new technologies. The Navy adheres to SSTC EIS/BO avoidance measures.
	Amphibious Warfare (AMW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.
	Expeditionary Warfare (EXW)	●	Same as above.
Range Transients	Anti-Surface Warfare (ASUW)	●	Range transients, involving commercial shipping, commercial fishing, and private pleasure boating, encroach on training, either by delaying events or forcing relocation to less than optimum locations. Commercial vessel and recreational vessel encroachment create avoidance areas and segments training/reduces realism. The Navy will continue to pursue opportunities to inform industry and the public of the impact of range transient encroachment on at-sea OPAREAS and Navy readiness. The safety zone out to 3nm encircling SCI. NBC and FACSFAC SD have worked with the US Coast Guard to effectively communicate safety zone status to the public (www.island.org). USCG is the enforcement agency. The Navy will continue to pursue opportunities to inform industry and the public of the impact of range transient encroachment on at-sea OPAREAS and Navy readiness.
	Mine Warfare (MW)	●	Same as above.
	Amphibious Warfare (AMW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Incidents of range transients causes the delay or cancellation of training activities. SSTC ocean and some bayside areas are open navigable waters so the Navy has no legal authority to request that boaters leave the boat lanes during scheduled training activities. Range transients around SCI create avoidance areas, prohibit certain training events, reduce range access, reduce realism, inhibit tactics development, and limit application of new technologies. Waters off SCI were designated 21 June 2010 through formal Federal rule making (Final Rule - Federal Register 20 May 2010) as a safety zone out to 3nm (encircling SCI). NBC and FACSFAC SD have worked with the US Coast Guard to effectively communicate safety zone status to the public (www.island.org). USCG is the enforcement agency. The Navy will continue to pursue opportunities to inform industry and the public of the impact of range transient encroachment on at-sea OPAREAS and Navy readiness, and will continue to work with U.S. Coast Guard to assess the feasibility of establishing safety zones in the SSTC boat lanes and undesignated Bay training areas. FACSFAC SD is currently negotiating with the FAA to establish a restricted area over all of SCI and extending out 12NM. This will allow security enforcement of range transient encroachment and will assist the public in avoiding hazardous training activities.
	Expeditionary Warfare (EXW)	●	Same as above.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

VACAPES Assessment Details

Range Mission Description

VACAPES consists of surface and subsurface ocean Operating Areas (VACAPES OPAREA) supported by airspace off the Virginia and North Carolina coasts and land areas supported by airspace. These sites support training for all Navy warfare areas, principally Naval forces assigned to the Norfolk, VA Fleet concentration area. Note: The Navy Dare County Bombing Range (NDCBR) EAP is being written with a tentative completion of December 2015.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strike Warfare	PMC	FMC	FMC	FMC	PMC	FMC	PMC		PMC				
Electronic Combat	FMC	FMC	FMC	FMC	PMC	PMC	PMC		PMC				
Anti-Air Warfare	PMC	FMC	FMC		FMC	PMC	PMC		PMC				
Anti-Surface Warfare		FMC	FMC	FMC	FMC	FMC	PMC		PMC				
Mine Warfare		FMC	FMC	FMC	PMC	FMC			PMC				
Amphibious Warfare													
Anti-Submarine		FMC	FMC	FMC	FMC	PMC	NMC		PMC				
Naval Special Warfare	PMC	FMC	FMC	FMC	PMC	PMC	FMC		PMC				
Expeditionary Warfare	PMC	FMC	FMC	FMC	PMC	PMC		FMC	PMC		FMC		FMC

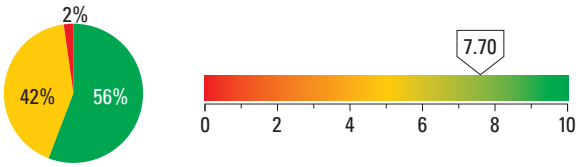
Legend: FMC PMC NMC

Encroachment Data

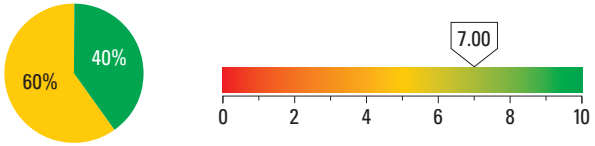
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strike Warfare	Minimal	Minimal			Moderate	Minimal	Minimal	Moderate	Minimal	Minimal	Moderate	Moderate
Electronic Combat	Minimal		Moderate		Moderate	Minimal	Minimal	Minimal			Moderate	Moderate
Anti-Air Warfare			Moderate	Moderate	Moderate	Minimal	Minimal	Minimal				Moderate
Anti-Surface Warfare			Moderate	Moderate	Moderate			Moderate	Minimal			Moderate
Mine Warfare				Moderate	Minimal				Minimal			Moderate
Amphibious Warfare												
Anti-Submarine			Moderate	Moderate	Minimal				Minimal			Moderate
Naval Special Warfare	Moderate											Moderate
Expeditionary Warfare	Moderate							Moderate				Moderate

Legend: Minimal Moderate Severe

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

The capability attribute most impacting range mission performance is Scoring & Feedback Systems. The mission areas most severely impacted are ASW and EC. There is no immediate change projected.

Summary Observations

Spectrum, Maritime Sustainability, Airspace, and Range Transients are the encroachment factors that have the most pervasive training impacts. All mission areas have considerable encroachment. There are no prevailing or emerging mitigation strategies that will alter training encroachment for the foreseeable future. Most encroachment is long-standing and has been addressed through maritime mitigation measures and operations procedures.

VACAPES Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	7.39	7.50	7.50	7.67	7.65	**Encroachment Scores**	8.70	8.38	8.38	8.25	7.05
EC for Landspace was Yellow in 2008 and reassessed to Green in 2009, and forward, based on an updated assessment of Landspace requirement to the primary use of the range, which is for only the "basic" level training. The 2011 Red rating for MW Scoring & Feedback changed to White based on a USFF evaluation that TSPI scoring data is not required. The 2012 NSW mission assessment re-added to assessment file, as it is a primary mission area for the VACAPES range complex.						Encroachment assessments for CY2008 were different than for CY2009–2012. The algorithm for the overall assessment score for 2009–2012 was revised from the original algorithm used in 2008 to provide greater fidelity and consistency across all range complexes. Based on an improved review process and revised algorithms, the assessments for CY2009–2012 provide a more accurate assessment of encroachment. The assessments for the latter years reveal there has been little encroachment change from year to year, with relatively constant overall scores through to 2012. The VACAPES-Northeast RCMP update is complete; the VACAPES OPAREA EAP is in work. DOI and private energy interests, to include foreign investment and acquisition in the vicinity of the OCS, are increasing as domestic energy demand builds. Naval offshore operating areas and training events may be affected. High priority areas include training ranges and sea space in and adjacent to all Navy OPAREAs. The Navy and OSD continue to work closely with the Fleets and BOEM to resolve issues of combined use of the OCS important to both agencies. Fleet review and analysis of impacts from both oil/gas and wind energy "lease sale" areas (Mission Critical Areas-MCAs) have been reviewed and forwarded to OSD. DoD and DOI coordination continues. There is potential for wind-farm development in the VACAPES OPAREA. Development of proposed lease blocks with wind farm infrastructure may have an impact on Navy testing and training activities conducted in the vicinity of the infrastructure. The encroachment time frame is undetermined. There is also potential for oil/gas development efforts in the VACAPES OPAREA. A Virginia lease sale resulting in oil/gas infrastructure may affect Navy testing and training activities conducted in the vicinity of the development. Although recent federal executive actions have placed a moratorium on Atlantic oil/gas development, this issue should remain in the Navy's view as the potential exists that it, along with other areas within the VACAPES Complex, may be again considered for exploration and development.					

VACAPES Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strike Warfare (STW)	🟡	Landspace is only available at NDCBR, which does not fully support size or topography requirements for placement of required number of targets. Use of live ordnance is not supported. Use of flares is restricted. No land area supports NSFS training or CSAR training. These shortfalls prohibit certain training events, reduce realism, and increase personnel optempo. The Navy recommends identifying east coast land areas of sufficient size to support standoff weapons and CSAR training. No completion date has been identified.
	Anti-Air Warfare (AAW)	🟡	Landspace is only available at NDCBR, which does not fully support size or topography requirements or support surface combatant detection of aircraft over land. Use of flares is restricted. These shortfalls prohibit certain training events, reduce realism, and increase personnel optempo. Overland ACM training is conducted at Fallon Range Training Complex. No additional land options are available within VACAPES.
	Naval Special Warfare (NSW)	🟡	Landspace is only available at JEB Little Creek-Fort Story, NAS Oceana Detachment Dam Neck, and Navy Dare County Bombing Range, which do not fully support live fire and maneuver and MOUT requirements. This prohibits certain training events, reduces realism, limits application of new weapon systems, reduces live fire proficiency, increases personnel tempo, and increases O&M costs. No additional Navy-owned land options are available within VACAPES. Other Service land areas are used to supplement land area requirements.
	Expeditionary Warfare (EXW)	🟡	Same as above.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

VACAPES Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Targets	Strike Warfare (STW)	🟡	Live ordnance is not allowed, the urban area is too small, NSFS is not supported ashore, and required targets do not provide both visual and infrared signatures. These shortfalls prohibit certain training events, reduce realism, limit application of weapon technologies, reduce live fire proficiency, increase personnel optempo, and increase O&M costs. The Navy recommends increasing the number and variety of targets with more realistic signatures. No completion date has been identified.
	Electronic Combat (EC)	🟡	Additional targets are required to achieve required density and a more representative threat. This prohibits certain training events, reduces realism, limits application of weapon technologies, reduces live fire proficiency, increases personnel optempo, and increases O&M costs. The Navy recommends increasing the number and variety of EC threats and to install portable systems where applicable. No completion date has been identified.
	Mine Warfare (MW)	🟡	There are insufficient training mines and range areas to support increased MW training. VACAPES must support the Navy's principal MH-60 and MH-53 MW helicopter squadrons. This prohibits certain training events, reduces realism, inhibits tactics, increases personnel optempo, and increases O&M costs. The Navy MW targets requirements were completed in POM-15 and 16; results are TBD.
	Naval Special Warfare (NSW)	🟡	Existing VACAPES beach landspace does not support placement of obstacles and defenses that support employment of HE ordnance clearing devices. This prohibits certain training events, reduces realism, limits application of new weapons, reduces live fire proficiency, increases personnel tempo, and increases O&M costs. The Navy recommends investigating other locations to support required training events. No completion date has been identified.
	Expeditionary Warfare (EXW)	🟡	Same as above.
Threats	Electronic Combat (EC)	🟡	The EC threat representation does not fully support EC threat levels 3 or 4 for required mission areas. The existing instrumentation systems are becoming obsolete and unsupportable through the FYDP. This reduces realism, inhibits tactics development, and greatly increases O&M costs. The Navy recommends maintaining the current upgrade schedule to preclude severe degradation of system capability. No completion date has been identified.
	Anti-Air Warfare (AAW)	🟡	Helicopter threat OPFOR is not available, the required number of air threat OPFOR is not available, and there is no dedicated supersonic threat OPFOR available. These shortfalls reduce realism; inhibit tactics, increase personnel optempo, and increase O&M costs to engage contact CAS. The Navy recommends increasing the number and types of air threat OPFOR. No completion date has been identified.
	Anti-Submarine (ASW)	🟡	There are limited dedicated live submarines, surface ships, or aircraft to serve in the OPFOR role. This prohibits certain training events, reduces realism, inhibits tactics, increases personnel optempo, and increases O&M costs to engage contract OPFOR. The Navy recommends investing in additional threat OPFOR and increasing the availability of submarines through the DESI and aircraft through CAS. No completion date has been identified.
	Naval Special Warfare (NSW)	🟡	Dedicated ground, armor, and mechanized vehicle OPFOR is not available. This prohibits certain training events, reduces realism, limits application of new weapons, reduces live fire proficiency, increases personnel tempo, and increases O&M costs. Navy recommends to investigate other locations that will support the required OPFOR and work with other forces for mutual support of training requirements. No completion date has been identified.
	Expeditionary Warfare (EXW)	🟡	Same as above.
Scoring & Feedback System	Strike Warfare (STW)	🟡	The OPAREA coverage is not complete, M&S is inadequate, and there is no RTKN. This reduces realism, inhibits tactics, increases personnel optempo, and increases O&M costs. The Navy recommends expanding and improving 2-D & 3-D coverage of the OPAREA, investing in JNTC compliant M&S, and improving debrief capabilities. No completion date has been identified.
	Electronic Combat (EC)	🟡	Same as above.
	Anti-Air Warfare (AAW)	🟡	Same as above.
	Anti-Surface Warfare (ASUW)	🟡	There is no VACAPES underwater tracking range, scoring capability, M&S, or post mission feedback. This prohibits certain training events, reduces realism, limits weapon technologies, inhibits tactics, reduces live fire proficiency, increases personnel optempo, increases O&M costs. The Navy recommends developing an east coast USWTR, expanding and improving 2-D and 3-D coverage of the OPAREA, investing in JNTC compliant M&S, and improving debrief capabilities. An East Coast USWTR is planned for the Jacksonville Range Complex; planned for FY2017; no completion date has been identified for other recommendations.
	Anti-Submarine (ASW)	🔴	There is no underwater tracking range, scoring capability, M&S, or post mission feedback. This prohibits certain training events, reduces realism, limits weapon technologies, inhibits tactics, reduces live fire proficiency, increases personnel optempo, and increases O&M costs. The Navy recommends developing an east coast USWTR, expanding and improving 2-D and 3-D coverage of the OPAREA, investing in JNTC compliant M&S, and improving debrief capabilities. An East Coast USWTR is planned for the Jacksonville Range Complex; planned for FY2017; no completion date has been identified for other recommendations.

VACAPES Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Range Support	Strike Warfare (STW)	●	A lack of a web-based scheduling system with pre-event, real-time, and post-event modules precludes most efficient scheduling and documenting of range usage. Post-event reporting is particularly critical for ordnance expenditures or active sonar usage in at-sea OPAREAs since MMPA permits require Navy to periodically report these values. Non-compliance or inaccurately reporting post-event values to regulators risks range access or prohibitions on training events that involve active sonar or high explosives at-sea. OPNAV N98 has determined that the DCAST system will be the SUA scheduling tool for all FACSFACs and all other Air Traffic Control facilities with SUA reporting requirements. DCAST system programmers are conducting site visits to the FACSFACs to gather operating area and airspace data to develop DCAST for each location.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.
	Expeditionary Warfare (EXW)	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Threats & Endangered Species	Naval Special Warfare (NSW)	●	Sea turtles and marine mammals can be found in the waters offshore from NAS Oceana Dam Neck Annex. Sea turtles use the Dam Neck beach for nesting purposes. Threatened and endangered marine mammal species may migrate through the littoral waters offshore. Both of these conditions result in potential training impacts for Naval Special Warfare Development Group (DEVGRU). Training activities affected are NSW OPS, Over-the-Beach, and Marksmanship. Navy will continue Fleet unit education on adherence to marine species protective measures.
	Expeditionary Warfare (EXW)	●	Sea turtles and marine mammals can be found in the waters offshore from NAS Oceana Dam Neck Annex. Sea turtles use the Dam Neck beach for nesting purposes. Threatened and endangered marine mammal species may migrate through the littoral waters offshore. Both of these conditions result in potential training impacts for Naval Expeditionary Combat Command (NECC) EOD forces. Training activities affected are EOD and Coastal Riverine Force (CRF) OPS, over-the-beach, marksmanship, explosives, and small craft. Navy will continue Fleet unit education on adherence to marine species protective measures.
Spectrum	Electronic Combat (EC)	●	Employment of Link 16, SPY-1 radar, SPS 49 radar, and IFF are restricted. Restrictions limit spectrum operations and prohibit certain training events, segment training/reduce realism, reduce training days, limit application of new weapons technologies, and inhibit new tactics development. The Navy continues to coordinate with appropriate frequency allocation and oversight agencies to seek spectrum relief and to develop encroachment strategies that will reduce encroachment while ensuring pending use of emerging spectrum technologies. Competition for frequency spectrum will add increased pressure on available bandwidth for Naval operations.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.

Figure 2-27 Navy Capability and Encroachment Assessment Detail (continued)

VACAPES Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Maritime Sustainability	Anti-Air Warfare (AAW)	●	Maritime protective and mitigation measures undertaken in compliance with regulatory requirements have resulted in training restrictions that reduce training flexibility and ultimately reduce training realism. All at-sea training is impacted to some degree; impacts are most significant to integrated warfare training using active underwater acoustic sources. The Navy and National Marine Fisheries Service (NMFS) have developed science based protective and mitigation measures that adequately protect marine species while accommodating military readiness activities. The Navy continues to develop Environmental Impact Statements and obtain permits and authorizations for its range complexes to ensure military training complies with applicable laws and regulations. Litigation risks remain a concern, entailing the potential to delay or further restrict training, despite the protective and mitigation measures applied by the Navy in compliance with the MMPA and the ESA. Endangered species/ critical habitat encroachment from the North Atlantic right whale has created avoidance areas that have resulted in some reduction of training days and prohibits certain training events. This area is relatively small in scope, however, if these types of restrictions were applied to other species/areas, there would be significant impacts to readiness through reduction in range access, segmentation of training/reduction in realism, limits on the application of new technologies, raised flight altitudes, reduced live fire proficiency, increased personnel tempo, and increased O&M costs. The Navy will continue to invest in marine mammal research; rely on scientifically valid empirical data results as basis of marine mammal mitigation development; factor mitigation effectiveness into permit requests and continue education of Fleet units to adhere to the maritime protective and mitigation measures and public education outreach efforts. Navy's authorizations under the MMPA and ESA include an adaptive management approach that includes continually evaluating existing mitigation measures for their potential impacts on training. If impacts on training from mitigation measures are identified and documented, Navy will raise these impacts with NMFS for resolution during an annual adaptive management review process.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.
Airspace	Strike Warfare (STW)	●	FAA is under pressure to use VACAPES and the Northeast SUA in a manner favorable to commercial aviation. FAA may become more averse to Navy SUA control protocols. Tourist banner towing aircraft and fish spotting aircraft at times intrude upon Dam Neck special SUA. This creates avoidance areas, reduces usage days, prohibits certain training events, reduces range access, segments training/reduces realism, inhibits new tactics development, increases costs and risks. Navy/FAA protocols should be revisited given commercial aviation's increasingly frequent intervention into airspace use and control priorities, e.g. processes involved with updates and changes regarding MTRs, MOAs, LOAs, and Mission Critical Areas.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
Adjacent Land Use	Strike Warfare (STW)	●	There are potential safety zone issues with regard to communities underlying Navy Dare County Bombing Range (NDCBR) and Long Shoal Naval Ordnance Area (LSNOA) SUA. The NDCBR compatibility zones extend over large areas of Dare and Tyrrell Counties, and some existing and future land uses in these zones are incompatible. The LSNOA compatibility zones extend over large areas of the Pamlico Sound and perimeter villages and some existing and future land uses in these zones are incompatible. This creates avoidance areas, restricts flight altitudes and/or airspeeds, and inhibits new tactics development. The Navy will work with Dare County to incorporate the RAICUZ recommendations into Dare County land use planning initiatives, continue the Defense Base Realignment and Closure (DBRAC) meetings, and support compatible land use such as farmland preservation.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Expeditionary Warfare (EXW)	●	Same as above.

VACAPES Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Wetlands	Strike Warfare (STW)	●	Self-imposed Clean Water Act/Dare County wetlands and land use plans limit target configuration, placement, and maintenance due to many NDCBR impact areas having been situated in designated wetlands. This Navy-induced encroachment affects STW by limiting targetry opportunities at NDCBR. Wetlands encroachment also creates avoidance areas. Consideration should be given to seeking out a wetlands delineation at NDCBR and to seek wetlands 404 permits to accommodate target configuration, placement, and maintenance. Navy should assess emerging demands for upgraded or additional impact areas within or out of the wetland areas to accommodate new munitions technologies.
	Electronic Combat (EC)	●	Same as above.
Range Transients	Strike Warfare (STW)	●	Range transients, involving commercial shipping, commercial fishing, and private pleasure boating encroach on training, either by delaying events or forcing relocation to less than optimum locations. Commercial vessel and recreational vessel encroachment create avoidance areas and segments training/reduces realism. This impacts operations and testing at Navy Shipboard Electronic Systems Evaluation Facility offshore VACAPES. The Navy will continue to pursue opportunities to inform industry and the public of the impact of range transient encroachment on at sea OPAREAS and Navy readiness.
	Electronic Combat (EC)	●	Same as above.
	Anti-Air Warfare (AAW)	●	Same as above.
	Anti-Surface Warfare (ASUW)	●	Same as above.
	Mine Warfare (MW)	●	Same as above.
	Anti-Submarine (ASW)	●	Same as above.
	Naval Special Warfare (NSW)	●	Same as above.
	Expeditionary Warfare (EXW)	●	Same as above.

Table 2-9 Navy Range Capability and Encroachment Assessment Comparison

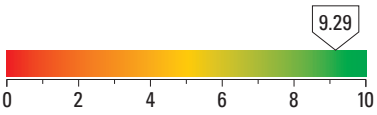
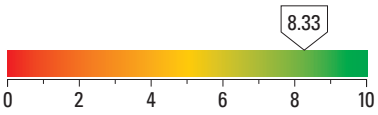
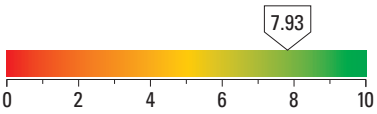
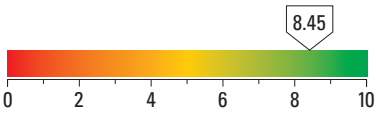
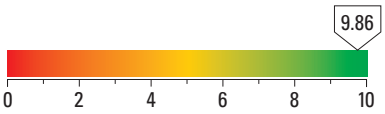
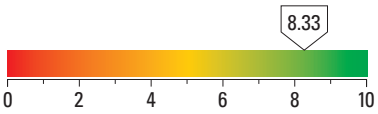
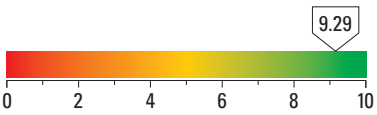
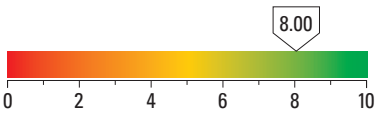
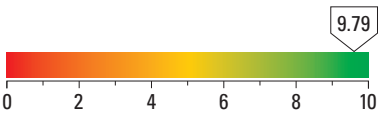
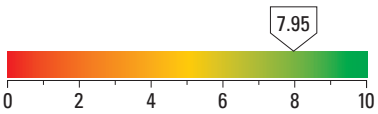
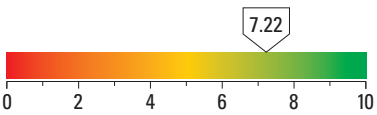
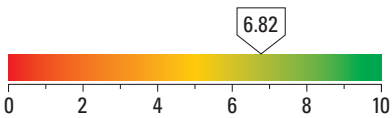
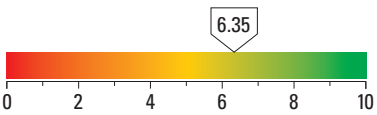
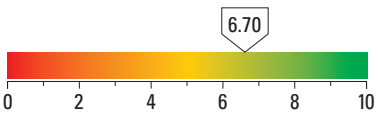
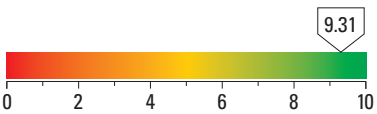
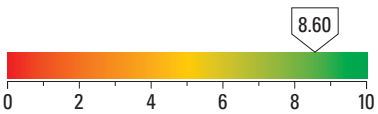
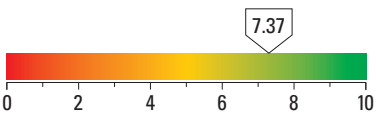
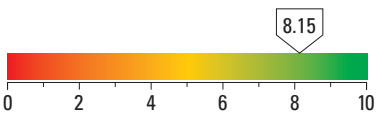
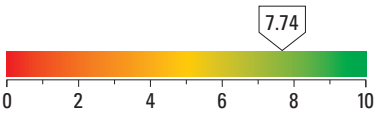
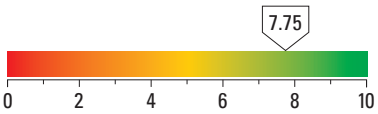
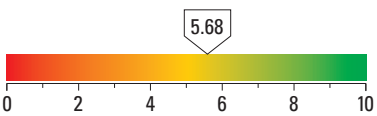
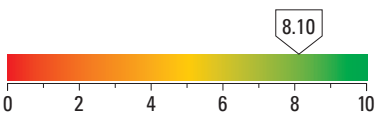
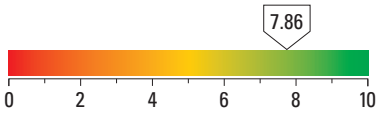
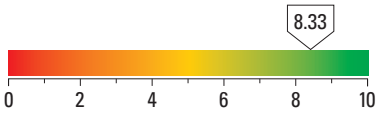
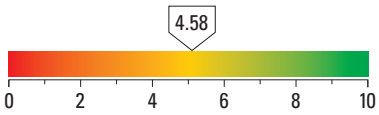
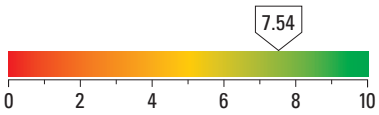
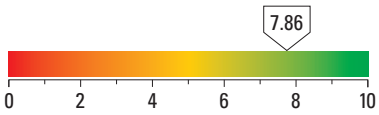
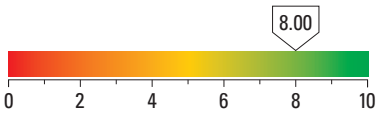
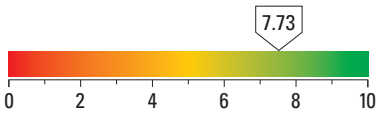
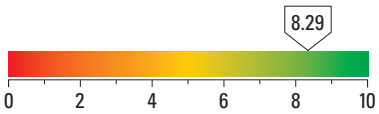
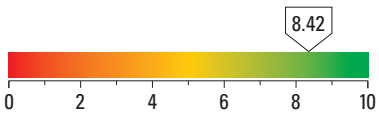
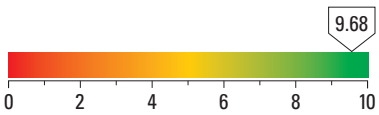
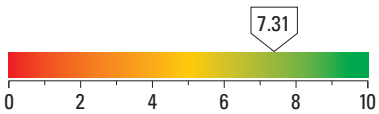
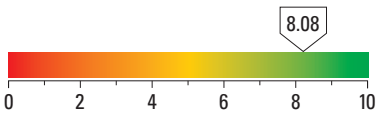
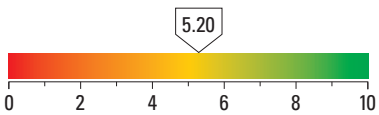
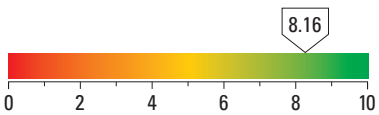
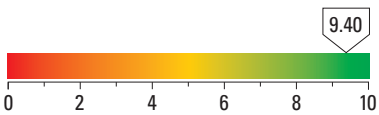
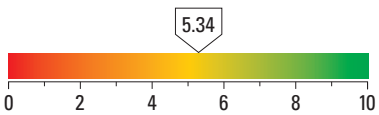
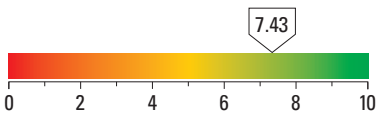
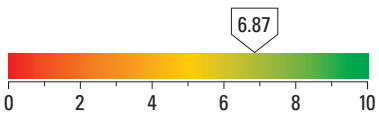
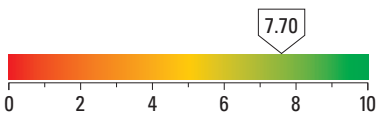
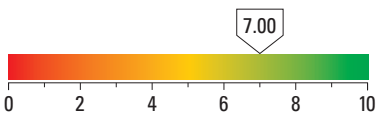
Range Name	Capability Score	Encroachment Score
Atlantic City		
Atlantic Test Range – Patuxent River		
AUTEC		
Boston		
China Lake		
El Centro		
Fallon		
Gulf of Mexico		
Hawaii		
Jacksonville		
Japan		

Table 2-9 Navy Range Capability and Encroachment Assessment Comparison (continued)

Range Name	Capability Score	Encroachment Score
Key West		
Mariana Islands		
Narragansett		
Navy Cherry Point		
NOCAL		
Northwest Training Range Complex		
Okinawa		
Point Mugu Sea Range		
SOCAL		
VACAPES		

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2.2.4 AIR FORCE RANGE ASSESSMENTS

Table 2-10 Air Force Capability Assessment Data Summary

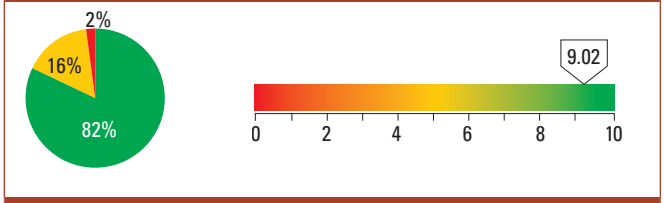
Range	NMC	PMC	FMC	Capability Scores
Adirondack	6	21	48	7.80
Airburst	0	9	68	9.42
Atterbury	0	3	40	9.65
Avon Park	0	7	33	9.13
BMGR	0	11	51	9.11
Blair Lake	0	16	38	8.52
Bollen	0	6	70	9.61
Cannon	0	25	21	7.28
Claiborne	0	6	55	9.51
Dare County	2	2	68	9.58
Draughon	1	19	24	7.61
Edwards Flight Test Range (EFTR)	0	13	81	9.31
Eglin Test & Training Complex (ETTC)	0	43	71	8.11
Falcon	0	7	65	9.51
Grand Bay	0	4	66	9.71
Grayling	0	3	87	9.83
Hardwood	0	6	81	9.66
Holloman	0	12	53	9.08
Idesuna Jima	10	22	0	3.44
Jefferson	0	17	70	9.02
McMullen	0	27	40	7.99
Melrose	0	15	40	8.64
Mountain Home Ranges	0	0	78	10.00
NTTR	4	17	61	8.48
Oklahoma	0	17	82	9.14
Pilsung	3	11	24	7.76
Poinsett	0	6	93	9.70
Polygone	0	12	2	5.71
Razorback	0	4	79	9.76
Shelby	0	5	94	9.75
Smoky Hill	0	0	69	10.00
Tori Shima	15	4	4	2.61
Townsend	0	1	69	9.93
UTTR	0	5	65	9.64
Waren Grove	0	11	64	9.27
Yukon	0	15	84	9.24
HQ AF	**41**	**402**	**2038**	**9.02**

Table 2-11 Air Force Encroachment Assessment Data Summary

Range	Severe	Moderate	Minimal	Encroachment Scores
Adirondack	0	15	56	8.94
Airburst	0	0	74	10.00
Atterbury	0	11	24	8.43
Avon Park	0	4	60	9.69
BMGR	0	12	63	9.20
Blair Lake	0	15	50	8.85
Bollen	0	8	79	9.54
Cannon	0	10	74	9.40
Claiborne	0	4	63	9.70
Dare County	0	1	87	9.94
Draughon	2	24	34	7.67
Edwards Flight Test Range (EFTR)	0	2	14	9.38
Eglin Test & Training Complex (ETTC)	0	49	92	8.26
Falcon	0	5	73	9.68
Grand Bay	0	2	67	9.86
Grayling	1	8	90	9.49
Hardwood	0	15	84	9.24
Holloman	0	16	61	8.96
Idesuna Jima	4	6	4	5.00
Jefferson	1	26	66	8.49
McMullen	0	5	83	9.72
Melrose	0	9	90	9.55
Mountain Home Ranges	0	2	97	9.90
NTTR	1	24	77	8.73
Oklahoma	0	20	101	9.17
Pilsung	1	8	55	9.22
Poinsett	0	3	96	9.85
Polygone	0	8	12	8.00
Razorback	0	8	84	9.57
Shelby	0	1	109	9.95
Smoky Hill	0	3	96	9.85
Tori Shima	0	4	8	8.33
Townsend	0	1	129	9.96
UTTR	0	3	65	9.78
Waren Grove	0	3	96	9.85
Yukon	0	31	90	8.72
HQ AF	**10**	**366**	**2503**	**9.33**

Of the 41 locations in the Air Force's range inventory in Appendix A, two electronic scoring sites (ESSs) were not assessed (Belle Fourche and Snyder). These two ESSs are not considered "range complexes" for the purpose of the report; therefore, the Air Force does not intend to evaluate them unless mission changes or some encroachment factors threaten their abilities to function. Additionally, Patrick and Vandenberg were not assessed because they are more operational in nature and do not fit in with the training aspects of this report.

Figure 2-28 Air Force Capability Chart and Scores



Summary Observations

Air Force's overall capability score increased from 8.88 in 2012 to 9.02 in 2015

- Air Force's Fully Mission Capable (FMC) assessments (green) increased from 80% in 2012 to 82% in 2015
- Partially Mission Capable (PMC) assessments (yellow) decreased from 17% in 2012 to 16% in 2015
- Not Mission Capable (NMC) assessments (red) decreased from 3% in 2012 to 2% in 2015

Historical Information, Results, and Future Projections

Calendar Year	2008	2009	2010	2011	2012
Capability Scores	8.52	8.52	8.91	9.02	8.88

The top three capability attributes with the greatest number of red and yellow assessments are (Figure 2-32):

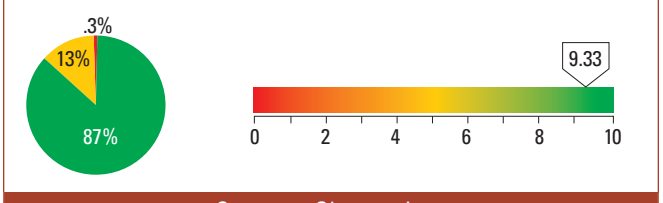
- Threats (6+62)
- Range Support (8+38)
- Infrastructure (8+34)

The top three mission areas with the greatest number of red and yellow assessment are (Figure 2-34):

- Counter Land (13+84)
- Strategic Attack (10+70)
- Electronic Warfare (7+52)

Refer to the Air Force's 36 individual range assessments for comments and additional information (Figure 2-36).

Figure 2-29 Air Force Encroachment Chart and Scores



Summary Observations

Air Force's overall encroachment score marginally decreased from 9.34 in 2012 to 9.33 in 2015

- Air Force's minimal risk assessments (green) remains unchanged as 87%
- Moderate risk assessment (yellow) remains unchanged as 13%
- Severe risk assessments (red) remains unchanged as 0.3%%

Historical Information, Results, and Future Projections

Calendar Year	2008	2009	2010	2011	2012
Encroachment Scores	9.08	9.07	9.28	9.44	9.34

The three encroachment factors with the greatest number of red and yellow assessment are (Figure 2-33):

- Airspace (1+67)
- Adjacent Land Use (6+51)
- Munitions Restrictions (1+64)

The top three mission areas with the greatest number of red and yellow assessments are (Figure 2-35):

- Electronic Combat Support (0+139)
- Air Drop (0+131)
- Counterland (5+81)

Refer to the Air Force's 36 individual range assessments for comments and additional information (Figure 2-36).

Figure 2-30 Air Force Capability Assessments by Range

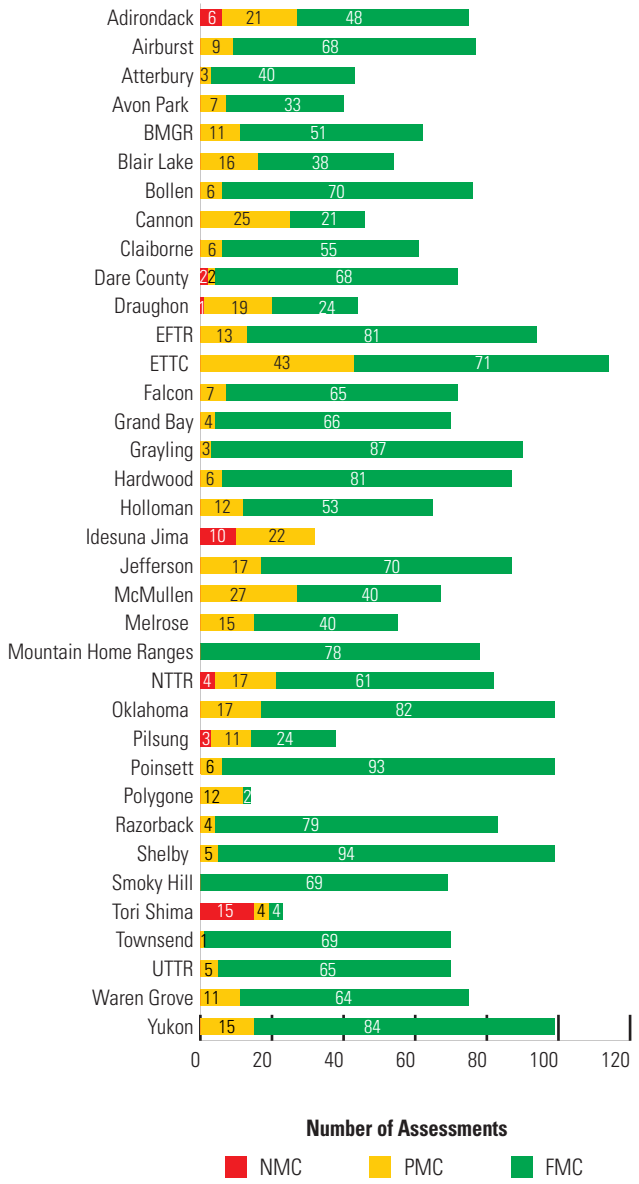


Figure 2-31 Air Force Encroachment Assessments by Range

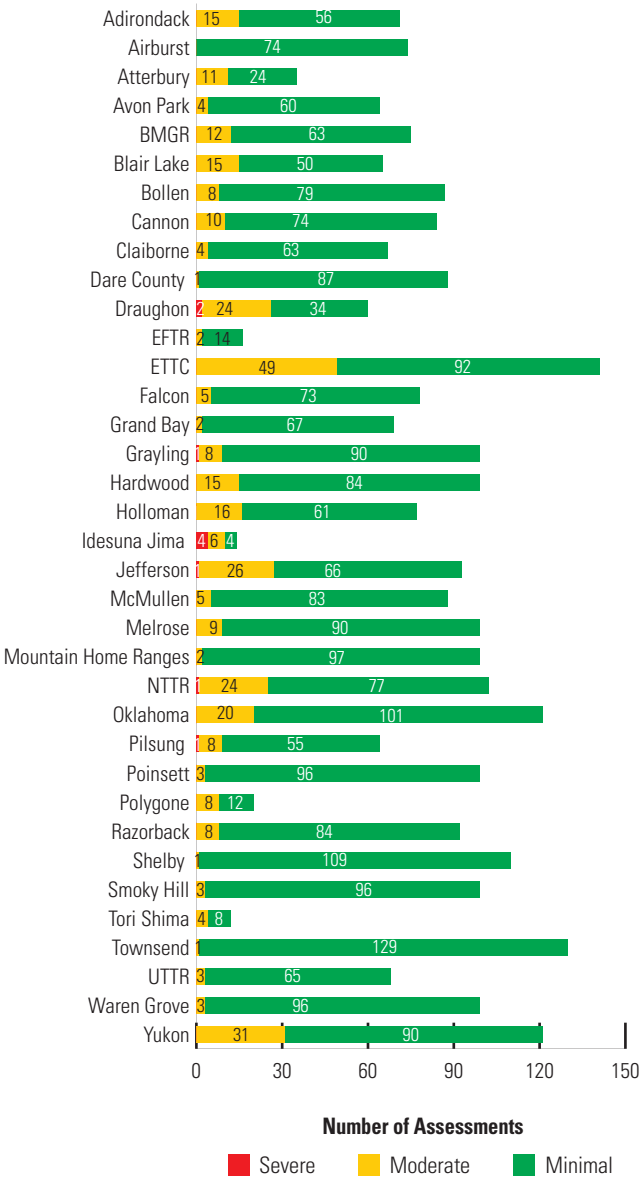


Figure 2-32 **Air Force** Capability Assessment by Attributes

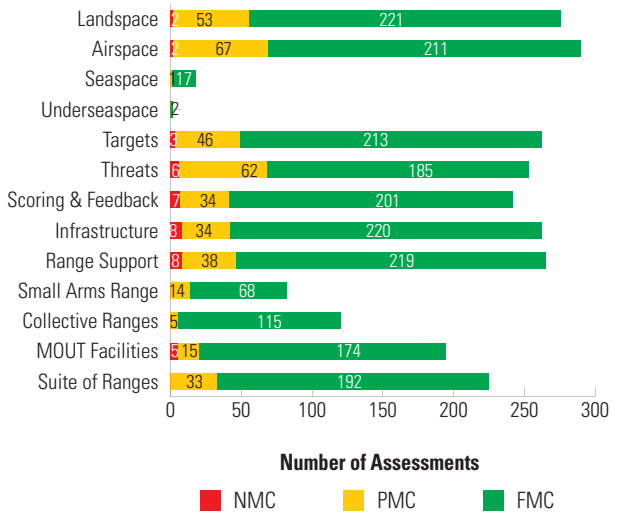


Figure 2-33 Air Force Encroachment Assessment by Factors

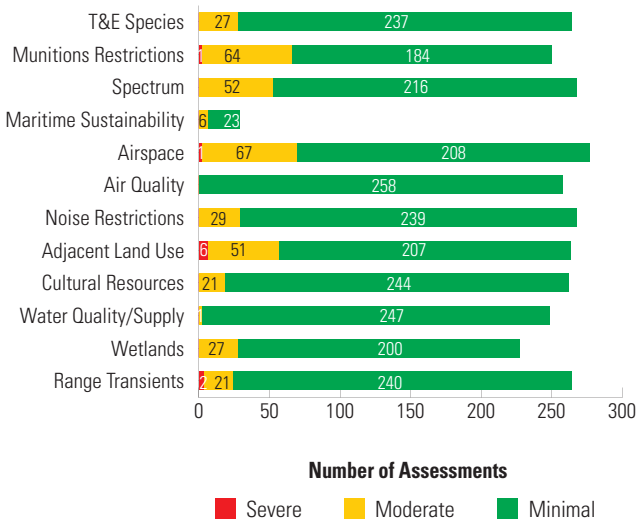


Figure 2-34 Air Force Capability Assessment by Mission Areas

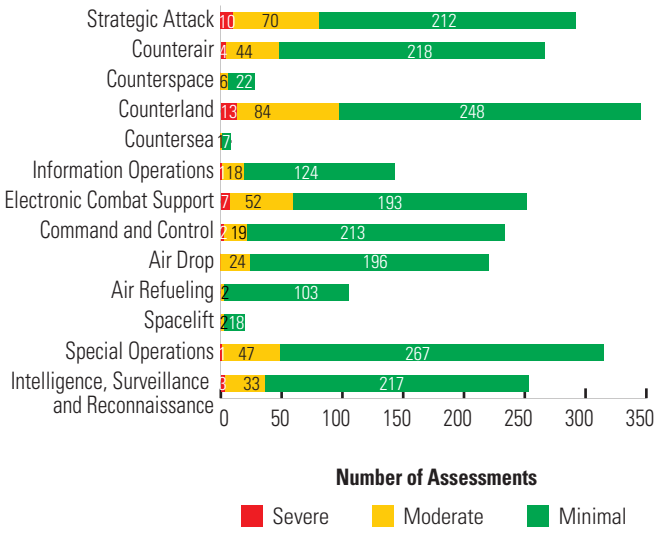


Figure 2-35 Air Force Encroachment Assessment by Mission Areas

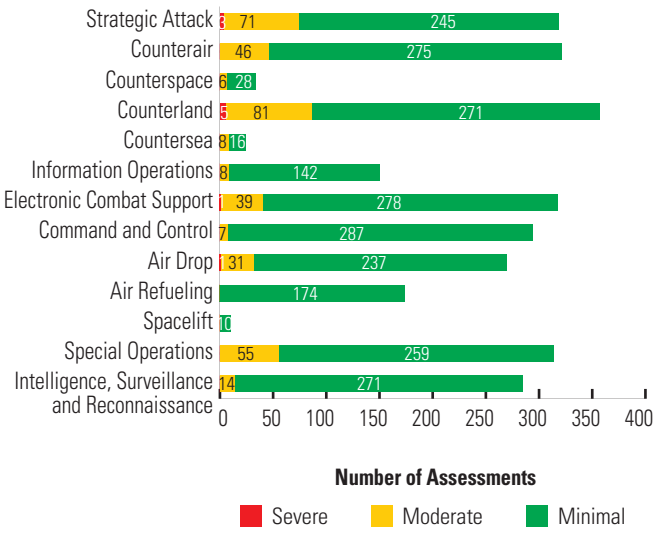


Figure 2-36 Air Force Capability and Encroachment Assessment Detail

Adirondack Assessment Details

Range Mission Description

Adirondack is a Class A Joint A-G (A-G) range, and intermediate training range for the ANG/AF, an all purpose range for the Army, and a combined arms/joint live fire exercise range. The primary users are the Vermont and New York Air National Guard..

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strategic Attack	FMC	FMC			PMC	PMC	FMC	FMC	PMC		FMC	FMC	FMC
Counterair	FMC	FMC			PMC	PMC	FMC		NMC				
Counterspace													
Counterland	FMC	FMC			PMC	PMC	FMC	FMC	NMC	PMC	FMC	PMC	PMC
Countersea													
Information Operations													
Electronic Combat Support	FMC	FMC			FMC	PMC	FMC	FMC	NMC		PMC		
Command and Control	FMC	FMC			FMC	FMC	FMC	FMC	NMC	FMC	FMC	PMC	FMC
Air Drop	PMC	FMC				FMC	FMC	FMC	FMC				
Air Refueling		FMC											
Spacelift													
Special Operations	PMC	FMC			FMC	FMC	FMC	FMC	NMC	PMC	FMC	PMC	PMC
Intelligence, Surveillance, and Reconnaissance	FMC	FMC			FMC	FMC	FMC	FMC	NMC	PMC	FMC	PMC	PMC

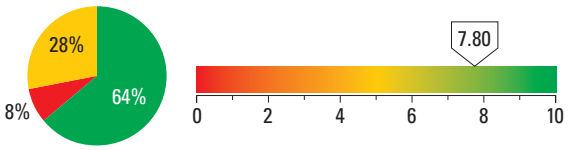
Legend: FMC PMC NMC

Encroachment Data

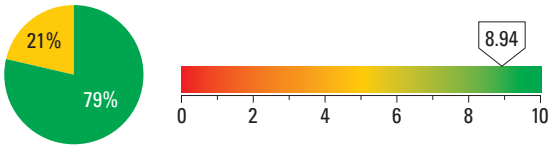
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strategic Attack	Minimal	Minimal	Minimal		Moderate	Minimal	Minimal	Minimal	Minimal	Minimal	Moderate	Minimal
Counterair		Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal			Minimal
Counterspace												
Counterland	Moderate	Moderate	Minimal		Moderate	Minimal	Minimal	Minimal	Minimal	Minimal	Moderate	Minimal
Countersea												
Information Operations												
Electronic Combat Support	Minimal		Minimal		Minimal	Minimal	Minimal	Minimal				Minimal
Command and Control	Moderate	Minimal	Minimal		Moderate	Minimal	Minimal	Minimal	Minimal	Minimal	Moderate	Minimal
Air Drop												
Air Refueling			Minimal		Minimal	Minimal		Minimal				Minimal
Spacelift												
Special Operations	Moderate	Moderate	Minimal		Moderate	Minimal	Minimal	Minimal	Minimal	Minimal	Moderate	Minimal
Intelligence, Surveillance, and Reconnaissance	Moderate		Minimal		Minimal	Minimal		Minimal		Minimal		Minimal

Legend: Minimal Moderate Severe

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

Adirondack Range is located on Ft. Drum and contained within its training areas. The range has large tracts of land that remain unusable, due to the presence of MPPEH. The range continues to request EOD support as personnel and funds become available in an effort to open up these areas for training use. Adirondack has had numerous requests from ASOS units and flying units for a digital gateway for training use on range. The range has requisitioned most of the equipment needed for this, but has not yet completed installation.

Summary Observations

Wetlands and Munitions Restrictions (residue) have restricted use of the vast majority of what would otherwise be usable training/target areas. The range has made significant progress in the past two years in clearing target areas of MPPEH and gaining approval from the Ft. Drum Environmental Division to develop those areas once cleared. Adirondack will continue to request EOD support to clear areas of MPPEH, and work with Ft. Drum's Environmental Division in an effort to gain access to areas near/in designated wetlands.

Adirondack Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	7.77	7.77	N/A	7.27	7.27	**Encroachment Scores**	8.96	8.96	N/A	8.94	8.94
ANG has implemented a capabilities sharing program for threat emitters by mobilizing its emitter capabilities for scheduled exercises and training rotations. ANG Force Structure is projected to be relatively stable throughout the FYDP.						No comments.					

Adirondack Limitation Details

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Airdrop	🟡	Significant progress has been made with EOD clearance, but large areas of land remain unusable due to the presence of MPPEH. These hazards prevent the range from constructing realistic airfield and realistic urban training areas, and allowing realistic maneuver of ground forces. The range will continue to request EOD support as funding and EOD personnel become available. Additional tree clearance will occur this year. The range needs an IR stimulator for realistic/relevant threat simulation.
	Special Operations	🟡	Same as above.
Targets	Strategic Attack	🟡	Significant progress has been made with EOD clearance, but large areas of land remain unusable due to the presence of MPPEH. These hazards prevent the range from constructing realistic airfield and realistic urban training areas. The range will continue to request EOD support as funding and EOD personnel become available.
	Counterair	🟡	Same as above.
	Counterland	🟡	Same as above, with the addition that MPPEH hazards prevent realistic maneuver of ground forces.
Threats	Strategic Attack	🟡	The Wideband Remote Emitter Threat System (WRETS) has no supply or depot support. The RWR Lite has very limited range. The range has very limited success providing Radar EW threats to its customers when requested to do so.
	Counterair	🟡	Same as above.
	Counterland	🟡	Same as above.
	Electronic Combat Support	🟡	Same as above.
Range Support	Strategic Attack	🟡	There is currently no Link 16 capability. The range has acquired most of the hardware to setup a Digital Gateway, but the installation is still in development.
	Counterair	🔴	Same as above.
	Counterland	🔴	Same as above.
	Electronic Combat Support	🔴	Same as above.
	Command and Control	🔴	Same as above.
	Special Ops	🔴	Same as above.
	Intelligence, Surveillance and Reconnaissance	🔴	Same as above.
Small Arms Ranges	Counterland	🟡	Much of the range has become overgrown and/or littered with MPPEH. This prevents installation of targets and precludes land navigation training on much of the range. The range continues to request EOD support and work with environmental personnel to clear more land.
	Special Ops	🟡	Same as above.
	Intelligence, Surveillance and Reconnaissance	🟡	Same as above.
Collective Ranges	Electronic Combat Support	🟡	The Wideband Remote Emitter Threat System (WRETS) has no supply or depot support. The RWR Lite has very limited range. The range has very limited success providing Radar EW threats to its customers when requested to do so.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Adirondack Limitation Details

Capability Observations

Factors	Assigned Training Mission	Score	Comment
MOUT Facilities	Counterland	●	Significant progress has been made with EOD clearance, but large areas of land remain unstable due to the presence of MPPEH. These hazards prevent the range from constructing realistic airfield and realistic urban training areas. The range will continue to request EOD support as funding and EOD personnel become available.
	Command and Control	●	Same as above.
	Special Ops	●	Same as above, with the addition that MPPEH hazards prevent realistic maneuver of ground forces.
	Intelligence, Surveillance and Reconnaissance	●	Same as above.
Suite of Ranges	Counterland	●	Same as above.
	Special Ops	●	Same as above.
	Intelligence, Surveillance and Reconnaissance	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Threatened and Endangered Species	Strategic Attack	●	The presence of the Indiana Bat prevents the cutting of trees, which may be used as habitat for the bat, during much of the year. This restriction delays or prevents clear cutting of various parts of the range for target construction.
	Counterland	●	Same as above.
	Command and Control	●	Same as above.
	Special Operations	●	Same as above.
	Intelligence, Surveillance and Reconnaissance	●	Same as above.
Munitions Restrictions	Counterland	●	Significant progress has been made in the past year with EOD clearance, but large areas of land remain unstable due to the presence of MPPEH. These hazards prevent the range from constructing realistic airfield and realistic urban training areas, and allowing realistic maneuver of ground forces. The range will continue to request EOD support for surface clearance as funding and EOD personnel become available.
	Special Operations	●	Same as above.
Aispace	Strategic Attack	●	Army UAS activity and the Safety Danger Zones created by concurrent use of other ranges on Fort Drum create a number of restrictions on any given day in the R5201 restricted airspace.
	Counterland	●	Same as above.
	Command and Control	●	Same as above.
	Special Operations	●	Same as above.
Wetlands	Strategic Attack	●	Wetlands restrictions have had a significant negative impact on target area/training area development. The approval process required to develop target/training areas in the vicinity of wetlands often takes years to navigate. Requests for use of the wetlands mitigation bank on Ft. Drum have always been denied. Wetlands cover much of the training areas on Ft. Drum and, combined with the presence of MPPEH, have precluded use of vast tracts of land that would otherwise be available for training. The range continues to work with the Environmental Division to resolve wetland related issues.
	Counterland	●	Same as above.
	Command and Control	●	Same as above.
	Special Operations	●	Same as above.

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Figure 2-36 **Air Force** Capability and Encroachment Assessment Detail (continued)

Airburst Assessment Details

Range Mission Description

Airburst is a 3,110 acre (845 acre impact area) Primary Training Range (PTR) located on the southern portion of Fort Carson Army Post. Airburst's mission is to provide today's warfighters with a training environment that closely mirrors the battlefields and threats they will face in today's combat theaters of operations. The range caters to a broad spectrum of federal, state, and local military; law enforcement; and first responder units. Range managers design relevant training packages/scenarios that most closely replicate the real world challenges these users will face. The range is authorized all types of inert ordnance, to include PGMs and JDAM. Primary training units include: 120FS (F-16 Buckley AFB, CO), 13ASOS (Joint Terminal Attack Controllers, Fort Carson, CO), 1-2 (AH-64, Fort Carson, CO), 2-135 (CH-47, UH-60 Buckley AFB, CO), 302AW (C-130, Peterson AFB, CO), 160th SOAR (AH-6, MH-60, MH-47), 10SFG (Fort Carson), EOD (Buckley AFB, Peterson AFB), Security Forces (140 SFS/460 SFS Buckley AFB, 137 SWS Greeley, 302 SFS/21 SFS Peterson AFB, 10 SFS U.S. Air Force Academy). Other users include: 917AW (A-10 Barksdale AFB, LA), various F/A-18 and F-16 units, PC-12 sensor testing (Centennial Airfield, CO), AF Research Lab, and the Naval Research Lab.

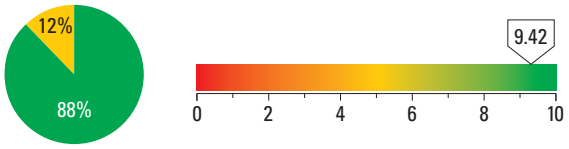
Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strategic Attack	FMC	PMC			FMC	PMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC
Counterair	FMC	PMC			FMC	FMC	FMC	FMC	FMC				FMC
Counterspace													
Counterland	FMC	PMC			FMC	PMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC
Countersea													
Information Operations													
Electronic Combat Support	FMC	FMC			PMC	FMC		FMC	FMC		FMC		FMC
Command and Control	FMC	FMC			FMC	FMC		PMC	FMC		FMC	FMC	FMC
Air Drop	FMC	FMC			FMC	PMC	FMC	FMC	FMC		FMC	FMC	FMC
Air Refueling													
Spacelift													
Special Operations	FMC	FMC			FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC
Intelligence, Surveillance, and Reconnaissance	FMC	FMC			FMC	FMC		PMC	FMC		FMC	FMC	FMC
Legend	FMC	PMC	NMC										

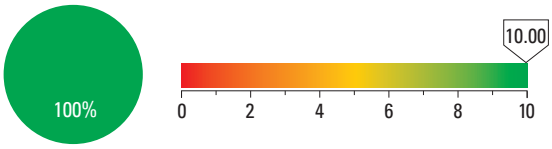
Encroachment Data

Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strategic Attack	Severe	Moderate	Severe		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Counterair												
Counterspace												
Counterland	Severe	Moderate	Severe		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Countersea												
Information Operations												
Electronic Combat Support	Severe		Severe		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Command and Control	Severe		Severe		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Air Drop	Severe	Moderate	Severe		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Air Refueling												
Spacelift												
Special Operations	Severe	Moderate	Severe		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Intelligence, Surveillance, and Reconnaissance	Severe		Severe		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Legend	Minimal	Moderate	Severe									

Capability Chart and Scores



Encroachment Chart and Scores



Airburst Assessment Details

Summary Observations	Summary Observations
A vast majority of areas rated yellow can be attributed to the range's inability to create the most realistic and relevant training environment due to insufficient landspace, airspace, funding and target sets. The range performs very well at Close Air Support, Basic Surface Attack, and Basic Air Drops. Training evolutions suffer in terms of realism/relevance when the mission dictates large ground forces, enhanced threats, and large force exercises. In the coming years we will continue to operate as is currently, maximizing available assets and personnel while operating on a shrinking budget.	No comments.

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	8.28	8.28	10.00	8.90	8.90	**Encroachment Scores**	8.86	8.86	10.00	10.00	10.00
ANG has implemented a capabilities sharing program for threat emitters by mobilizing its emitter capabilities for scheduled exercises and training rotations. ANG Force Structure is projected to be relatively stable throughout the FYDP.						No comments.					

Airburst Limitation Details

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Airspace	Strategic Attack		The airspace has Insufficient volume and attributes to conduct large force exercises, or for bomber aircraft to maneuver. The airspace is marginal for fighter aircraft conducting strategic attack training.
	Counterair		The airspace has insufficient volume and attributes to conduct large force exercises.
	Counterland		The airspace volume and attributes limit tactics and ordnance. Virtually all attack runs with level PGMs or JDAM are limited to one direction.
Targets	Electronic Combat Support		There is limited capability to provide targets in the electro-magnetic spectrum, with respect to both target types as well as range and cueing.
Threats	Strategic Attack		There is limited capability to replicate a few tactical surface-to-air threats (1 RWR Lite system, and 2 Smokey SAM launchers).
	Counterland		Same as Strategic Attack, with the addition that untrained (but highly motivated ground force personnel act as aggressors/Red Force against JTACS/SOF.
	Air Drop		Same as Strategic Attack.
Infrastructure	Command and Control		The current communications suite is antiquated and in need of replacement by building of greater functional configuration, visibility, and cost-effective construction. A date of remedy is unknown. Additionally, there are no SADL, Link-16 or RADS (ATC feed) capabilities at the range. The range is currently attempting to procure software/hardware for a RADS feed.
	Intelligence, Surveillance and Reconnaissance		There is no small paved runway available for small ISR platforms requiring a prepared or hard surface.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
No Comments.			

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Atterbury Assessment Details

Range Mission Description

The Indiana Range Complex is a grouping of geographically supportive training facilities comprised of Atterbury Range, Jefferson Range, and the Muscatatuck Center for Complex Operations. Of the three, Atterbury and Jefferson are operated by the Air National Guard. Atterbury Range provides primary training for the 122nd FW, 178th FW, 180th FW, and joint training for LFE's, MEU's, SOF, SMERF, FEMA, ASOS, IW, Urban Warfare, and Homeland Defense all in conjunction with the Muskatatuck Urban Warfare Training Center.

Capability Data

Mission Areas	Capability Attributes												
	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
Strategic Attack	FMC	FMC			FMC	FMC	FMC	FMC	FMC			FMC	PMC
Counterair		FMC				FMC			FMC				
Counterspace													
Counterland	FMC	FMC			FMC	FMC	FMC	FMC	FMC	FMC	FMC		FMC
Countersea													
Information Operations													
Electronic Combat Support													
Command and Control													
Air Drop													
Air Refueling													
Spacelift													
Special Operations	FMC	FMC			FMC	FMC	FMC	FMC	FMC	FMC		FMC	PMC
Intelligence, Surveillance, and Reconnaissance	FMC	FMC			FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC	PMC

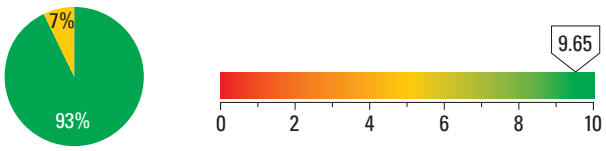
Legend: FMC, PMC, NMC

Encroachment Data

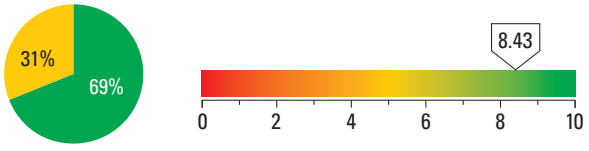
Mission Areas	Encroachment Factors												
	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Strategic Attack	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Moderate	Moderate	Minimal			Minimal
Counterair					Moderate	Minimal	Moderate	Moderate				Moderate
Counterspace												
Counterland		Minimal			Moderate		Moderate	Moderate	Moderate	Moderate		Minimal
Countersea												
Information Operations												
Electronic Combat Support	Minimal	Minimal			Minimal	Minimal	Minimal	Minimal	Minimal	Minimal		Minimal
Command and Control												
Air Drop			Minimal		Minimal		Minimal	Minimal				
Air Refueling												
Spacelift												
Special Operations												
Intelligence, Surveillance, and Reconnaissance												

Legend: Minimal, Moderate, Severe

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

Seven percent of the Air Force's range/range complex mission areas are rated Partially Mission Capable (PMC). MOUT Facilities and Suite of Ranges are impacting the range's capability to support Intelligence, Surveillance, and Reconnaissance; Special Operations; and Strategic Attack.

Summary Observations

Thirty-one percent of the range/range complex mission is moderately impacted by encroachment factors. Noise Restrictions and Adjacent Land Use are the main factors restricting the range's ability to support Counterland, Counterair, and Strategic Attack.

Historical Information, Results, and Future Projections

Historical Information, Results, and Future Projections

Atterbury Assessment Details

Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	8.98	8.98	8.98	9.29	9.29	**Encroachment Scores**	8.23	8.23	8.23	8.23	8.23
ANG has implemented a capabilities sharing program for threat emitters by mobilizing its emitter capabilities for scheduled exercises and training rotations ANG Force Structure is projected to be relatively stable throughout the FYDP. Atterbury has recently been able to implement ground maneuver within the area of operations and accommodate additional forces to train within the range, enhancing combined arms training opportunities.						The Air Force is currently working on formalizing a process to give Atterbury a seat at Army Range Control to better explain and coordinate air activities. This has led to increased availability and integrated training exercises. It has also enabled the range to accommodate other forces into Atterbury's area of operations. The range has also worked with the tactical airstrip on post to coordinate with rotary wing and airdrop platforms.					

Atterbury Limitation Details

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Suite of Ranges	Strategic Attack	●	There are various types of ranges available on post through the Army. With Atterbury's limited space, the range works with Army Range Control to provide these resources at other sites on post.
	Special Operations	●	Same as above.
	Intelligence, Surveillance and Reconnaissance	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Airspace	Counterair	●	The Racer MOA cannot be scheduled at the same time as the Jefferson Proving Ground MOA, restricting the potential number of missions that could be scheduled. The Air Force is currently working on integrating with Range Control to have a full time representative embedded in the programming/scheduling process to better integrate these assets.
	Counterland	●	There are occasional altitude restrictions over adjacent Army ranges. This limits full spectrum operations. The Air Force is currently working on integrating with Range Control to have a full time representative embedded in the programming/scheduling process to better integrate these assets.
Noise Restrictions	Strategic Attack	●	Missions cannot overfly Princes Lakes to the west due to noise complaints. There is currently no practical solution to this problem. Currently, all aircraft (including UAS) must maintain altitude or distance from the most affected areas.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
Adjacent Land Use	Strategic Attack	●	Missions cannot overfly Princes Lakes to the west due to noise complaints. There is currently no practical solution to this problem. Currently, all aircraft (including UAS) must maintain altitude or distance from the most affected areas.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
Cultural Resources	Counterland	●	Requires coordination with Range Control.
Water Quality/ Supply	Counterland	●	Requires coordination with Range Control.
Range Transients	Counterair	●	There are occasional civilian aircraft entering airspace during operations. Atterbury is able to monitor airspace with a feed from the FAA and have the ability to call voice to the FAA to mitigate any general aviation aircraft while fighter/attack aircraft are operating in the MOA.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Avon Park Assessment Details

Range Mission Description

Avon Park Air Force Range (APAFR) provides DoD and Allied users a full spectrum training facility focused on air-to-ground operations. The complex maintains unique target sets, training sites, and state of the art scoring systems in battle space designated for fire and maneuver. Infrastructure supports any size unit up to and including composite large force exercises. While APAFR is part of the 23 Wing and an ACC installation, the range's primary user is the 93rd FS, Homestead ARB, FL. APAFR is also host to Atlantic Strike and Jaded Thunder LFEs.

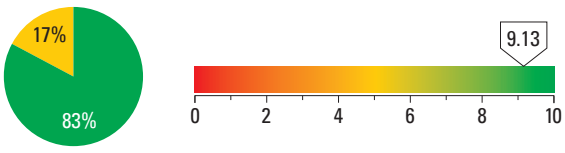
Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strategic Attack													
Counterair		FMC				PMC	PMC	FMC	FMC				
Counterspace													
Counterland	FMC	FMC			FMC	PMC	PMC	PMC	FMC	FMC	FMC	FMC	FMC
Countersea													
Information Operations													
Electronic Combat Support													
Command and Control	FMC	FMC			FMC	PMC							
Air Drop	FMC	FMC			FMC			FMC	FMC				
Air Refueling	FMC	FMC			FMC			FMC	FMC				
Spacelift													
Special Operations	FMC	FMC			FMC	PMC	FMC	FMC	FMC	FMC		FMC	FMC
Intelligence, Surveillance, and Reconnaissance													
Legend	FMC				PMC			NMC					

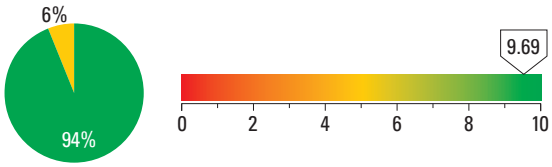
Encroachment Data

Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strategic Attack												
Counterair	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Counterspace												
Counterland	Moderate	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Moderate	Minimal
Countersea												
Information Operations												
Electronic Combat Support												
Command and Control	Minimal				Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Air Drop	Moderate	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Air Refueling	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Spacelift												
Special Operations	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Moderate	Minimal
Intelligence, Surveillance, and Reconnaissance												
Legend	Minimal			Moderate			Severe					

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

Although technically adequate for the current counterland capability mission, Avon Park's mission to host more robust and better training opportunities would be enhanced by allowing VFR operations from the range runway. Using the range runway for operations would reduce en route time for fighter aircraft, thus resulting in a savings of fuel and time or an increase in on-station time for the training of the ground personnel. Also of note is the range has limited threat capability for any aircraft mission.

Summary Observations

Avon Park's current top encroachment problem is threatened and endangered (T&E) species. Within the last year, the range has had to decide on alternates to the desired end state for target presentation and flight paths due to location of T&E bird species. This trend is expected to continue.

Avon Park Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	9.62	9.62	9.62	8.81	8.81	**Encroachment Scores**	9.32	9.32	9.32	9.57	9.57
Previous years discussed the impact of more missions coming to Avon Park. Although the range is approaching maximum capacity based on extra hours available, use requests are not being denied. However, it does seem that the range is getting more and more requests for specialized training, be it UAS support or specific target requests. The range works very hard with users to provide what they want and ask for, but environmental aspects pose obstacles (albeit today these obstacles can be overcome).						Previous year assessments have concentrated on encroachment from outside range borders. However, Avon Park has completed a JLUS, and the 4 counties and 3 major municipalities near the range all support the mission. The range has a very robust involvement in the REPI program securing conservation/ encroachment easements along the southern border. All this will ensure the continued success of the range. The newest trend is that more T&E species seem to be appearing in areas that are actively used for training. This could be a short term finding or could ultimately lead to long term problems.					

Avon Park Limitation Details

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Threats	Counterair	●	Avon Park has no high-fidelity, surface to air threat replication capability. The lack of high-fidelity threats limits the quality of training, especially during large force exercises. There are no current plans to integrate high-fidelity threats at Avon Park.
	Counterland	●	Same as above.
	Command and Control	●	Same as above.
	Special Operations	●	Same as above.
Scoring & Feedback System	Counterair	●	Avon Park lacks any TSPI capability, which limits the fidelity of air to air training.
	Counterland	●	Same as above.
Infrastructure	Counterland	●	Avon Park has an 8000x150 ft runway that is currently only certified as an LZ. The lack of runway certification limits the number and type of aircraft that can operate from the range; however, completing a runway certification would be cost prohibitive based on the MAJCOM assessment.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Threatened & Endangered Species	Counterland	●	Avon Park Air Force Range (APAFR) has 13 Federally-listed T&E species. The 3 major species are the Florida Grass Hopper Sparrow, Florida Scrub Jay, and Red-Cockaded Woodpecker. If the Gopher Tortoise becomes listed, it also will have the potential to impact the mission. Some of the current impacts are highlighted by the requirement for bird spikes on targets, which then restrict ground troops from using the targets as observation positions. The current way ahead is a scheduled joint meeting between Avon Park and the Fish & Wildlife Service to see if a programmatic Biological Opinion can be written to include all mission activities that benefits both the military mission and the T&E species. Also, germination research is being conducted into propagation methods for re-establishing some of the listed plant species (e.g., pigeon wings and wire weed).
	Air Drop	●	Same as above.
Wetlands	Counterland	●	Any new training mission, project, or change to an existing range activity that impacts jurisdictional wetlands requires coordination and approval from Army Corps of Engineers (COE) for 404 (dredge and fill activates) and state entities regarding clean water certification. The range coordinates with the COE to determine which wetlands are jurisdictional and which wetlands are isolated and do not need further COE coordination.
	Special Operations	●	Same as above.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Barry M. Goldwater Range (BMGR) Assessment Details

Range Mission Description

BMGR East (BMGR-E) is the major training range for the 56 FW, 162 FW, 355 FW, 563 RQS, and Arizona Army National Guard. BMGR supports daily A-G sorties and electronic combat training. The range also supports: Air Guard/Air Reserve Test Center operations; Arizona ANG "Snowbird" deployed operations; ACC directed Angel Thunder Ex and USMC Weapons and Tactics Instructor Course training; world-wide JTAC training as well as coalition war fighter A-G employment; HE/inert weapons employment; combat laser operations with a vast array of targets; and full spectrum Air Combat Training Systems to include ACMI, threat simulation, datalink network, C2. Primary range users include: 56 FW (AETC) F-16/F-35. 162 FW AZ ANG (AETC) F-16; 355 FW (ACC) A-10; 563 RQG (AFSOC) HC- 130/H-60; AFRES H-60; AZ ArNG AH-64; and four separate and distinct foreign military sales squadrons from Taiwan, Singapore and the Netherlands.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strategic Attack	●	●			●	●		●	●		●	●	●
Counterair	●	●			●	●	●	●	●		●	●	●
Counterspace													
Counterland	●	●			●	●	●	●	●		●	●	●
Countersea													
Information Operations													
Electronic Combat Support	●	●				●							
Command and Control	●	●							●				
Air Drop	●	●				●	●	●	●	●	●	●	●
Air Refueling		●							●				
Spacelift													
Special Operations	●	●			●	●		●	●	●	●	●	●
Intelligence, Surveillance, and Reconnaissance	●	●			●	●						●	

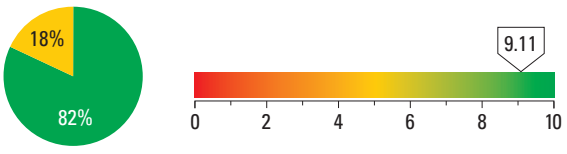
Legend: FMC ● PMC ● NMC ●

Encroachment Data

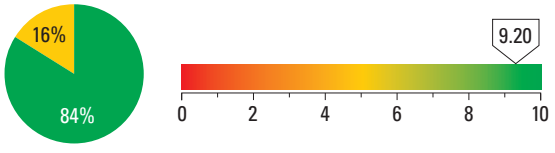
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strategic Attack	●	●	●		●	●	●	●	●	●		●
Counterair	●	●	●		●	●	●	●	●			●
Counterspace												
Counterland	●	●	●		●		●	●	●	●		●
Countersea												
Information Operations			●									
Electronic Combat Support			●		●				●			●
Command and Control			●		●				●			●
Air Drop	●	●	●		●	●	●		●			●
Air Refueling	●	●	●		●	●	●	●	●	●		●
Spacelift												
Special Operations	●	●	●		●	●	●	●	●	●		●
Intelligence, Surveillance, and Reconnaissance	●	●	●		●	●	●	●	●	●		●

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Barry M. Goldwater Range (BMGR) Assessment Details

Summary Observations	Summary Observations
The limited number and type of Threat Emitters on range are the most significant capability limitation which inhibits full support of current (4th generation fighters) and future users (5th generation fighters). The Mission Area most severely impacted is Electronic Combat Support.	No BMGR-E complex Mission Areas are significantly impacted by encroachment. Nearly 83 percent of the range/range complex mission areas are fully capable and are not impacted by encroachment factors. Seventeen percent of the range/range complex Mission Areas are moderately impacted by encroachment factors, and are being addressed. While it appears impacts from Cultural Resources and Range Transients are affecting the BMGR-E the most, the installation is still able to fully support the mission as it stands today. Future/different military mission requirements may be more or less impacted in the out years. Cultural Resources impact is prevalent given magnitude of archeological finds on range and its impact is mitigated through mission requirement assessment, planning, and impact mitigation measures. Illegal trespass has been steady overall, but raises concern for human safety due to lack of solid visibility downrange. The Air Force is seeing illegal transients in new locations and in areas not traditionally monitored. U.S. Border Patrol agents have become increasingly aggressive and law enforcement efforts are potentially having a greater impact on the natural and cultural resources on the range as well as occasionally disrupting training missions. The Sonoran Pronghorn population is on the increase due in part to a joint captive breeding venture. A second herd has been established away from the BMGR, with consideration being given to a third herd. Potential exists to ease biological opinion restrictions mid-term vice long-term if herd continues to grow at current rate.

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	8.77	8.77	8.77	8.77	8.77	**Encroachment Scores**	9.13	9.13	9.13	9.13	9.13
Capabilities have improved slightly, specifically in the Air Drop and Special Operations Mission Areas. Additional drop zones have been approved to support user requests, including ability to score drops on manned ranges. A rescue range has been added to provide specific support to special operations units; features include pop-up targets, simulated downed helo, simulated damage MRAP, and six landing zones for PJ insertion.						The overall rating improved in 2015 due only to improved fidelity of assessment (inclusion of ISR ratings, which were not reported in the past). Future projections are for continued low mission impact from encroachment factors. Until the US-Mexican border can be truly controlled, range transients will continue to be an issue and will occasionally impact the military mission. Coordination with Customs & Border Protection (CBP) is occasionally lacking and causes safety concerns when U.S. Border Patrol (USBP) unexpectedly enters target areas. The 56 FW is pursuing MOUs with USBP for range access procedures and road dragging processes to educate agents and improve communications and processes for law enforcement access to BMGR-E areas. CBP tactical infrastructure near the border could help reduce range transients and associated law enforcement need to access the ranges. Currently there are no electronic observation means available on the BMGR-E (USAF side). All clearing is done by humans on site and can have limited effect based on volume of landspace. Renewable energy infrastructure development is prevalent in many areas on the north side of the BMGR-E boundary and in the vicinity of Gila Bend, AZ. The 56 FW is trying to stay engaged with developers and state agencies to ensure compatible development with military flying operations. So far there has been no noted impact to the training mission.					

Barry M. Goldwater Range (BMGR) Limitation Details

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Threats	Electronic Combat Support	●	There is a lack of double-digit threat capability, and no electronic means for real time feedback capability to ECM or maneuver, resulting in limited usefulness to the flying community. There is no planned action at this time; operations must provide requirement in order for BMGR-E to realize capability to support requirement.
	Intelligence, Surveillance, & Reconnaissance	●	There is limited threat generation down range, which limits ISR techniques and does not effectively support mission. Unknown remedy at this time; addressing need, however operational requirement will drive capability.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Barry M. Goldwater Range (BMGR) Limitation Details

Capability Observations

Factors	Assigned Training Mission	Score	Comment
Scoring & Feedback System	Counterland	●	Manned range scoring only; no scoring on tactical ranges. This limits positive feedback to aircrew on effectiveness. The short-term solution is to provide limited optical scoring capability in one of the tac ranges; limited capability funded in-house.
	Air Drop	●	Manned range scoring only; no scoring on tactical ranges. This limits operational feedback on effectiveness. There is no planned remedy at this time; no operational requirement for drop zone scoring.
Range Support	Command and Control	●	There is limited capability for daily operations. No infrastructure exists to support operational C2 (AOC) if desired. LMR coverage is severely lacking. Air/ground advisory service is available, but an ATC-like facility and positive control are necessary to sustain future operations. The safety of humans on the ground and restrictions to aircrew based on low situational awareness from a C2 perspective negatively impact training. The current C2 node continues to grow in support of range and airspace operations--provides access, de-confliction, and situational awareness to users with limited resources (one long range FAA radar feed; read-only Air Marine Operations Center (DHS) composite radar feed), extremely limited LMR system. The LMR repeater architecture was submitted for assessment and approval; funding unknown and the installation must wait for overall LMR upgrade of trunked system. An ATC-like facility is being readdressed for requirements/funding. The capability seen as a must, given future real-time airspace sharing with FAA and expected integration of different assets downrange.
	Special Operations	●	There are limited maneuver areas and no instrumented MOUT facilities. This affects viable training opportunities for unique user set/requirements. There is no known remedy at this time; operators have not specifically addressed limiting factors with BMGR management. Currently, they have limited on-ground maneuver training opportunities.
Collective Ranges	Counterland	●	The range is primarily air-maneuver centric. This provides a limited opportunity to integrate full spectrum air with ground maneuver such as convoy escort. The Range Enhancement EIS (small teams ground movement) addressed this shortfall to a limited degree. A Record of Decision was signed in May 2013.
MOUT Facilities	Counterland	●	There are limited maneuver areas and no instrumented MOUT facilities. This affects viable training opportunities for unique user set/requirements. There is no known remedy at this time; operators have not specifically addressed limiting factors with BMGR management. Currently they have limited on-ground maneuver training opportunities.
	Special Operations	●	MOUT areas are relatively rudimentary and limited in complexity (i.e., they are not instrumented for IED/cellular network and do not allow for full scale recovery operations). There is limited utility/operational use. The Air Force plans to continue to develop limited maneuver MOUT areas in support of Special Operations and CSAR. While it may not be feasible to develop down range, Gila Bend AFAF is a potential candidate to support special mission training requirements.
	Intelligence, Surveillance, & Reconnaissance	●	Same as above.
Suite of Ranges	Special Operations	●	Same as above.

Barry M. Goldwater Range (BMGR) Limitation Details

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Threatened & Endangered Species	Strategic Attack	●	Sonoran Pronghorn antelope (endangered species) presence on range closes targets and slows EOD/maintenance activity. There is a continuing program of unique on-going assessment and avoidance measures. A new Biological Opinion was realized in 2010, which reduced target closure criteria and opened targets by over 80%; realized one take statement. Additional captive breeding plot being proposed by Fish and Wildlife Service; herd will be classified 'experimental' ergo should not have any operational impact to mission however, if animals intermix with existing herd (by area), then they become protected.
	Counterland	●	Same as above.
Munitions Restrictions	Strategic Attack	●	High Explosive Incendiary (HEI) bullets are not allowed on range due to EOD and safety concerns, which limits training opportunities. The Air Force is considering developing an HEI-only target area; no projected completion date at this time.
	Counterland	●	Same as above.

Barry M. Goldwater Range (BMGR) Limitation Details

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Cultural Resources	Strategic Attack	●	BMGR-E land is rich in cultural artifacts and requires assessment and mitigation of each site that may or may not affect operations. Given time, each can be mitigated, minimizing impact. Cultural resource surveys and Section 106 consultation required for most operational undertakings (outside existing/historical target sets); discovery may impact training objectives and limit scope of operations. The Air Force is continuing a programmatic survey of all range lands to determine eligibility of site(s) and continuing to balance operational needs with cultural and biological sensitivities.
	Counterland	●	Same as above.
	Air Drop	●	Same as above.
	Special Operations	●	Same as above.
Range Transients	Strategic Attack	●	Illegal human traffic and resulting law enforcement cross/access the BMGR-E. There is currently no electronic ground detection exists downrange. Discovery leads to ceasing weapons expenditures and/or range closure. Planned actions include continued interaction with CBP agents and continued research on feasibility of ground based ground detection radar systems in interest of human safety. The Air Force has leveraged early morning Civil Air Patrol sorties to help clear the range before opening. This program has been deemed a success to help visually acquire illegal traffic (abandoned and staged vehicles) and act as a deterrent to illegal traffic.
	Counterland	●	Same as above.
	Air Drop	●	Same as above.
	Special Operations	●	Same as above.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Blair Lake Assessment Details

Range Mission Description

Blair Lake primarily provides a venue for basic skill development and recurring proficiencies in air-to-ground freefall and strafing ordnance delivery operations. Blair Lake R-2211 is primarily a Basic Surface Attack (BSA) Class-A or B Scoring capable range.

Capability Data

Mission Areas	Capability Attributes												
	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
Strategic Attack													
Counterair	PMC	PMC			FMC	FMC	FMC	FMC	FMC			FMC	FMC
Counterspace													
Counterland	PMC	PMC			PMC	PMC	FMC	FMC	FMC			FMC	FMC
Countersea													
Information Operations													
Electronic Combat Support	FMC	FMC			FMC	PMC	FMC	FMC	FMC			FMC	FMC
Command and Control													
Air Drop	FMC	FMC			PMC	FMC	FMC	PMC	FMC			FMC	FMC
Air Refueling													
Spacelift													
Special Operations	PMC	FMC			FMC	PMC	FMC	FMC	FMC			PMC	FMC
Intelligence, Surveillance, and Reconnaissance	FMC	FMC			PMC	PMC	PMC	PMC	FMC			FMC	FMC

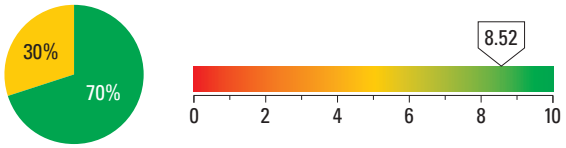
Legend: FMC, PMC, NMC

Encroachment Data

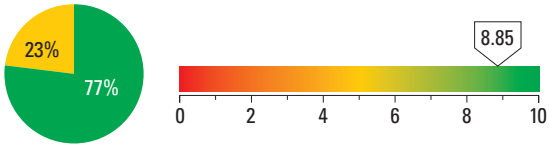
Mission Areas	Encroachment Factors												
	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Strategic Attack												
Counterair	Minimal	Moderate	Minimal		Moderate	Minimal	Minimal	Moderate	Minimal	Minimal	Minimal	Minimal
Counterspace												
Counterland	Minimal	Moderate	Minimal		Moderate	Minimal	Minimal	Moderate	Minimal	Minimal	Moderate	Minimal
Countersea												
Information Operations												
Electronic Combat Support	Minimal	Minimal	Moderate		Moderate	Minimal	Minimal	Moderate	Minimal	Minimal	Minimal	Minimal
Command and Control												
Air Drop	Minimal	Moderate	Minimal		Moderate	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Air Refueling												
Spacelift												
Special Operations	Minimal	Minimal	Minimal		Moderate	Minimal	Minimal	Minimal	Minimal	Minimal	Moderate	Minimal
Intelligence, Surveillance, and Reconnaissance	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Moderate		Minimal	Minimal	Minimal

Legend: Minimal, Moderate, Severe

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

Blair Lake R-2211 is very good at its designed capability, being a BSA range. It does not lend itself well to large force employments, nor to doing ground maneuver operations due to its small size and isolated locale.

Summary Observations

Blair Lake range (R-2211) is a small, Class A/B conventional bombing range. It is remotely located with the only access via air during summer months and winter periods when ice bridges are not constructed. The overall encroachment score is low because of its limited mission and remote location.

Blair Lake Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	7.31	7.31	8.61	N/A	8.43	**Encroachment Scores**	9.09	9.09	8.64	N/A	8.86
Short of a significant change in aircraft basing in Alaska, Blair Lake capabilities are not expected to change either negatively or positively in the next five years.						Encroachment Factors have not changed significantly in the recent past, nor are they expected to change in the next five years. The limited mission, limited use, and remote nature inhibit encroachment impacts.					

Blair Lake Limitation Details

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Counterair	●	The small range size limits air operations to small-unit tactics such as BFM or ACM. There is no remedy; some mitigation is possible by scheduling the adjacent Eielson MOA simultaneously, providing up to a four-ship of air cover. The range can be used for regeneration of Opposing Force air assets during large force employments in adjacent airspaces.
	Counterland	●	The small range size limits air operations supporting ground maneuver tactics. There is no remedy, but some mitigation is possible by scheduling the adjacent Eielson MOA simultaneously, providing up to a four ship of air cover. Also, there is limited terrain available in/near infrastructure and targets that are conducive to vehicle and foot movements. Most terrain is sensitive tundra and wetlands.
	Special Operations	●	Same as Counterland.
Airspace	Counterair	●	The small range size limits air operations to small-unit tactics such as BFM or ACM. There is no remedy; some mitigation is possible by scheduling the adjacent Eielson MOA simultaneously, providing up to a four-ship of air cover. The range can be used for regeneration of Opposing Force air assets during large force employments in adjacent airspaces.
	Counterland	●	The small range size limits large force air operations in support of counterland. There is no remedy, but some mitigation is possible by scheduling the adjacent Eielson MOA simultaneously. The range is still usable for 4-ship or less of CAS support.
Targets	Counterland	●	Infrastructure targets and maneuver spaces suitable for large scale training operations are limited. The range is best suited to small unit movement and small CAS scenarios. Sensitive Tundra terrain and isolated locale preclude further development.
	Air Drop	●	Air Drop is limited to the main complex and must avoid target impact areas. The target sizes are small and in close proximity to habitable structures, which restricts the munitions training units are able to expend. The surrounding terrain is muskeg/permafrost soils which are not conducive to movement by foot. There is no remedy other than expensive gravel excavation and backfill.
	Intelligence, Surveillance, Reconnaissance	●	Year round access is limited, inhibiting placement of C4ISR targets. There is no cost effective remedy until permanent year-round access is developed.
Threats	Counterland	●	Surface to Air threat emitters are not normally resident. They could be emplaced; however it would be logistically and financially challenging.
	Electronic Combat Support	●	Surface to Air threat emitters are not normally resident. They could be emplaced, however it would be logistically and financially challenging. Additionally, electronic emitters face added restrictions due to their proximity and line-of-sight to critical FAA radars and communications nodes.
	Special Operations	●	Same as Counterland.
	Intelligence, Surveillance, Reconnaissance	●	Same as Counterland.
Scoring & Feedback System	Intelligence, Surveillance, Reconnaissance	●	The range currently has limited feedback and scoring for any type of C4ISR operations.
Infrastructure	Air Drop	●	The range is isolated and remote, which makes load recovery challenging.
	Intelligence, Surveillance, Reconnaissance	●	The range is isolated and remote, which limits ability to emplace detailed C4ISR targets and feedback systems.
MOUT Facilities	Special Operations	●	Existing infrastructure can be used for small-unit tactics but are not true MOUT facilities. Additionally, there are no permanently installed feedback systems for small-unit tactics.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Blair Lake Limitation Details

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Munitions Restrictions	Counterair	●	Counterair may be conducted, but primarily limited to short range engagements or small unit tactics due to small lateral and vertical size of airspace. There is no room for live ordnance expenditures. One remedy for poor long-range ordnance delivery training abilities is scheduling Eielson MOA and R-2211 simultaneously, alleviating some lateral space restrictions.
	Counterland	●	Counterland is limited by small number of targets/target sets. Surrounding terrain is muskeg/permafrost soils that are not conducive to movement by foot/vehicle, and the range's remote nature precludes significant build up. No remedy other than expensive gravel excavation/backfill and road building.
	Air Drop	●	Air Drop is limited to main complex and must avoid target impact areas. Targets are small and in close proximity to habitable structures, thus restricting choices of munitions or aerial delivery bundles that can be expended. Surrounding terrain is muskeg/permafrost soils that are not conducive to movement by foot. No remedy other than expensive gravel excavation and backfill.
Spectrum	Electronic Combat Support	●	There is limited capability to emplace threat emitters on-range. They have to be flown in during summer months, or hauled over an ice bridge during winter and left there. Similarly, personnel to operate the threat emitters must be flown in and out, adding significantly to O&M costs. The airspace lateral and vertical limits may limit tactics to familiarization operations only. Last, the close proximity and direct line of site to critical FAA radars limits the type and quantity of emitters.
Airspace	Counterair	●	Airspace volume is too small for large force employment. It is strictly designed for a 4-ship maximum, and simple/basic tactics execution.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Air Drop	●	Same as above.
	Special Operations	●	Same as above.
Adjacent Land Use	Counterair	●	There is limited Special Use - Military Operating Area (MOA) airspace surrounding the Restricted Area. In addition, all lands surrounding are wetlands, sensitive forest lands, and/or possess civil airways. All of these factors act as de-facto encroachment aspects.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Intelligence, Surveillance, Reconnaissance	●	Same as above.
Wetlands	Counterland	●	The surrounding terrain is comprised of sensitive muskeg/permafrost soils. It is not conducive to movement by vehicle or foot during summer months. Targets are limited to existing small number of bombing circles where permafrost soils have been mitigated. There is no remedy other than expensive gravel excavation and backfill.
	Special Operations	●	Same as above.

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Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Bollen Assessment Details

Range Mission Description

Provide a quality, realistic tactical range environment for air-to-ground, airdrop and Joint Terminal Attack Controller (JTAC) training to ensure the combat readiness of flying units throughout the Northeast and Mid Atlantic region. Primary Users include 121 FW, 175 FW, 193 SOW, 148 ASOS, 3 AS, 914 AW, 57 WPS, 1/104 AAB.

Capability Data

Mission Areas	Capability Attributes												
	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
Strategic Attack	PMC	PMC			FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC
Counterair		PMC			FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC
Counterspace													
Counterland	PMC	PMC			FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC
Countersea													
Information Operations													
Electronic Combat Support													
Command and Control	FMC	FMC			FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC
Air Drop	FMC	PMC			FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC
Air Refueling													
Spacelift													
Special Operations	FMC	FMC			FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC
Intelligence, Surveillance, and Reconnaissance	FMC	FMC			FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC

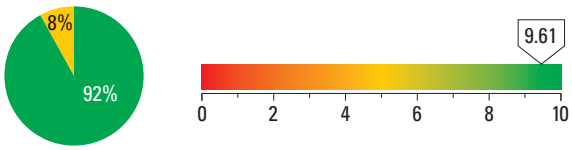
Legend: FMC, PMC, NMC

Encroachment Data

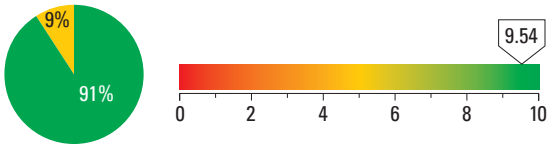
Mission Areas	Encroachment Factors												
	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Strategic Attack	Minimal	Minimal	Minimal		Minimal	Minimal	Moderate	Minimal	Minimal	Minimal	Minimal	Minimal
Counterair	Minimal	Moderate	Minimal		Minimal	Minimal	Moderate	Minimal	Minimal	Minimal	Minimal	Minimal
Counterspace												
Counterland	Minimal	Minimal	Minimal		Minimal	Minimal	Moderate	Minimal	Minimal	Minimal	Minimal	Minimal
Countersea												
Information Operations												
Electronic Combat Support	Minimal		Minimal		Minimal	Minimal	Moderate	Minimal	Minimal	Minimal	Minimal	Minimal
Command and Control	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Air Drop	Minimal	Minimal	Minimal		Moderate	Minimal	Moderate	Minimal	Minimal	Minimal	Minimal	Minimal
Air Refueling												
Spacelift												
Special Operations	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Intelligence, Surveillance, and Reconnaissance	Minimal	Minimal	Minimal		Minimal	Minimal	Moderate	Minimal	Minimal	Minimal	Minimal	Minimal

Legend: Minimal, Moderate, Severe

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

Air-to-ground activities are limited due to airspace. There is limited tactical maneuvering at low altitudes, and attack headings are restricted. Some munition types are restricted to diving deliveries only, due to landspace limitations. Counterair is the fallback mission within the range airspace. Fourth Generation fighters will require additional airspace for tactical maneuvering.

Summary Observations

Air-to-ground activities are limited due to airspace. There is limited tactical maneuvering at low altitudes, and attack headings are restricted. Some munition types are restricted to diving deliveries only, due to landspace limitations. Counterair is fallback mission within the range airspace. Fourth Generation fighters will require additional airspace for tactical maneuvering.

Bollen Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	8.90	8.90	8.77	8.77	8.77	**Encroachment Scores**	9.43	9.43	9.15	9.15	9.15
The size of the current airspace needs to be modified. Preliminary research and discussions with FAA have taken place regarding modifying existing training airspace and positive results are anticipated. Several new missions are being integrated into the range. These new missions will increase training realism and do so on a non-interference basis with existing training missions.						Encroachment issues are stable at this time. Noise restrictions are the primary encroachment issue, but can be mitigated through community outreach and Public Affairs involvement.					

Bollen Limitation Details

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strategic Attack	●	The small size of the impact area limits weapons delivery to diving attacks for certain munitions. There is no planned remedy.
	Counterland	●	Same as above.
Airspace	Strategic Attack	●	Range activities are limited due to airspace constraints; there is limited tactical maneuvering at low altitudes, and attack headings are restricted. An airspace expansion proposal being worked.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Air Drop	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Munitions Restrictions	Counterair	●	The small size of the restricted airspace prohibits the use of Air-to-Air munitions; training is limited to dry engagements only. There is no planned remedy.
Airspace	Air Drop	●	The range airspace is limited for the airdrop racetrack. Airdrop users maneuver in unprotected airspace between delivery events. An airspace expansion initiative is in progress.
Noise Restrictions	Strategic Attack	●	The range hours of operation are limited to 0700–2300 hours local to minimize impact to local community. Operations outside the core hours are approved on a case-by-case basis. The installation is limiting night operations. There is currently no planned remedy.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Air Drop	●	Same as above.
	Intelligence, Surveillance, and Reconnaissance	●	Same as above.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Cannon Assessment Details

Range Mission Description

Cannon Range is the primary training range for the 442FW. The 442FW utilizes Cannon Range twice a day Monday thru Friday and one weekend a month. Cannon hosts Joint Terminal Attack Controllers on an average of three weeks per month working with the A-10's in Close Air Support. Cannon also supports the 131 & 509BW B-2 training, 139th AW for Airdrops, as well as an assortment of other types of air to ground exercises throughout the year. Cannon supports the 1-135th and the 3-135th Army aviation units and Missouri Army Guard in their UH-60 and AH-6 live gunnery training.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strategic Attack	●	●			●		●	●	●				
Counterair													
Counterspace													
Counterland	●	●			●		●	●	●		●	●	
Countersea													
Information Operations	●							●	●				
Electronic Combat Support	●	●				●		●	●				
Command and Control	●	●			●			●	●			●	
Air Drop	●	●			●		●	●	●				
Air Refueling													
Spacelift													
Special Operations	●	●			●		●	●	●		●	●	
Intelligence, Surveillance, and Reconnaissance	●	●						●	●				

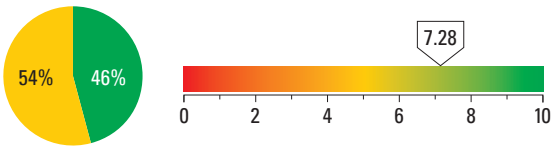
Legend: FMC ● PMC ● NMC ●

Encroachment Data

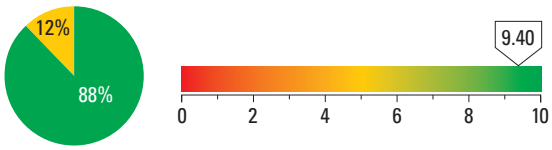
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strategic Attack	●	●	●		●	●	●	●	●	●	●	●
Counterair	●	●	●		●	●	●		●	●		●
Counterspace												
Counterland	●	●	●		●	●	●	●	●	●	●	●
Countersea												
Information Operations												
Electronic Combat Support	●	●	●		●	●	●	●	●	●	●	●
Command and Control	●		●		●	●	●	●	●	●	●	●
Air Drop	●	●	●		●	●	●	●	●	●	●	●
Air Refueling												
Spacelift												
Special Operations	●	●	●		●	●	●	●	●	●	●	●
Intelligence, Surveillance, and Reconnaissance	●		●		●	●	●	●	●	●	●	●

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

Cannon Range primarily provides a joint training environment for Counterland operations. Other training uses in decreasing order of utilization are Special Operations, Air Drop, Strategic Attack, ISR, and Counterair. Training for Command and Control, Electronic Combat Support, and Information Operations are integrated in each mission area (within Cannon Range's capabilities).

Summary Observations

Adjacent land use is the highest encroachment factor affecting Cannon Range. As part of Fort Leonard Wood, small arms ranges are encroaching on the east side of Cannon to the point where it has affected all air usage to some degree, and in some cases limiting when users can occupy these facilities (Army .50 cal range being active). The main affected mission area is Counterland, since this is the primary mission area.

Cannon Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	5.17	5.17	5.17	5.09	5.09	**Encroachment Scores**	9.05	9.05	9.05	9.11	9.11
ANG has implemented a capabilities sharing program for threat emitters by mobilizing its emitter capabilities for scheduled exercises and training rotations. ANG Force Structure is projected to be relatively stable throughout the FYDP.						Scores are similar to previous assessments; however, improved business practices have been implemented to mitigate the impact of the .50 cal Army range. Range managers have continued to deconflict the range schedule proactively with Fort Leonard Wood. Encroachment will continue to be an issue in the future, maybe more so since the Army is modifying some of their small arms ranges, to include Range 24 (.50 cal) to support more soldiers. This will negate the current way of deconflicting schedules. Currently, the Army's requirement to train soldiers on the .50 cal range is able to be mitigated by giving them days that Cannon Range is not scheduled to go hot. In the future, however, more soldiers will need training on those ranges and the Air Force sees encroachment to be an issue for several years to come. In the future, with current encroachment from other DoD assets (i.e., Army), Cannon Range will mitigate all conflicting land usage requirements by developing a solid relationship with our DoD counterparts. This will include analyzing the scheduling process to ensure all parties can perform their missions using the same landspace to accomplish goals.					

Cannon Limitation Details

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strategic Attack	🟡	Adjoining land uses limit or preclude certain ordnance deliveries, due to Weapon Danger Zone (WDZ) containment requirements. There is no planned remedy.
	Counterland	🟡	Adjoining land uses limit certain ordnance deliveries (particularly IAM) due to WDZ size. IAM deliveries are available, but limited. The terrain limits feasible observation positions for Type 1 CAS controls.
	Air Drop	🟡	Range is unable to conduct static line airdrop due to vegetation, terrain, and adjacent HE impact area.
	Special Operations	🟡	Adjoining land uses limit or preclude certain ordnance deliveries. Terrain limits feasible observation positions for Type 1 CAS controls.
Airspace	Strategic Attack	🟡	The volume of airspace is limited in size for large type aircraft, and acceptable for fighter size aircraft on a daily basis. For large force exercises, airspace is severely limited. Opportunities exist for airspace expansion if the mission dictates.
	Counterland	🟡	Same as Strategic Attack.
	Electronic Combat Support	🟡	The volume of airspace limits types of EC aircraft that can utilize range airspace. Other nearby airspace can accommodate Iron Triad. The volume and attributes (chaff/flare restrictions) of airspace limit some types of defensive reactions.
	Command and Control	🟡	The volume of airspace limits types of C2 aircraft that can utilize range airspace. Other nearby airspace can accommodate Iron Triad (Lindbergh MOA/ATCAA).
	Air Drop	🟡	Same as Strategic Attack.
	Special Operations	🟡	Same as Strategic Attack.
	Intelligence, Surveillance, Reconnaissance	🟡	The volume of airspace limits types of ISR aircraft that can utilize range airspace. Other nearby airspace can accommodate manned ISR. The range accommodates space-based ISR. The restricted airspace is suitable for small and micro-UAS, but marginal for medium UAS.
Threats	Electronic Combat Support	🟡	Limited capability to replicate a few surface-to-air tactical threats (2 RWR Lite systems, and 2 Smokey SAM launchers).
Scoring & Feedback	Strategic Attack	🟡	A portion of the target array is un-scoreable; aircraft and ground personnel TSPI are not collected or stored. The range is SADL equipped, with no JTIDS capability, and no method to monitor C4I network information flow. There is some hardware on site for implementation of live and synthetic network. The scoreable target array has increased since 2009; however, minor adjustments of camera angles and FOV would vastly increase scoring capability.
	Counterland	🟡	Same as above.
	Special Operations	🟡	Same as above.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Cannon Limitation Details

Capability Observations

Factors	Assigned Training Mission	Score	Comment
Infrastructure	Information Operations	●	There is a limited space to improve/add hardware. Fiber optic cable from Fort Leonard Wood has been cut by contractors many times and is degraded.
	Electronic Combat Support	●	Same as above.
Range Support	Strategic Attack	●	There is an insufficient number of personnel (full-time or part-time) to maintain target array, conduct support functions, or provide 2-shift manning. As a result, operational hours are limited to 8 hours per day.
	Counterland	●	Same as Strategic Attack.
	Information Operations	●	Same as Strategic Attack, with the addition that there is no SIPRNET capability at this time; however, it could be if needed. There is limited NIPRNET bandwidth.
	Electronic Combat Support	●	Same as Strategic Attack.
	Command and Control	●	Same as Strategic Attack.
	Air Drop	●	Same as Strategic Attack, with the addition that there are limited resources (personnel and equipment) to handle CDS or HE airdrops.
	Special Operations	●	Same as Strategic Attack.
	Intelligence, Surveillance, and Reconnaissance	●	Same as Strategic Attack.

Cannon Limitation Details

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Munitions Response	Strategic Attack	●	No live ordnance is permitted. Theoretically, the range has limited capability to employ IAM. 170 acres of inactive U.S. Army artillery range cannot be cleared for range residue. Flares are not permitted below 1,000 ft. AGL.
	Counterair	●	Chaff (except RR-112) is not permitted above 3,000 ft. AGL
	Counterland	●	No live ordnance is permitted and white phosphorous is not permitted. Theoretically, the range has limited capability to employ IAM. 170 acres of inactive U.S. Army artillery range cannot be cleared for range residue; chaff (except RR-112) not permitted above 3,000 ft. AGL. Flares are not permitted below 1,000 ft. AGL. Illumination flares are not permitted.
	Electronic Combat Support	●	Chaff (except RR-112) not permitted above 3,000 ft. AGL. Flares not permitted below 1,000 ft. AGL.
	Air Drop	●	Same as Electronic Combat Support.
	Special Operations	●	Same as Counterland.
Airspace	Counterland	●	Approximately 10% of the time, SDZs from U.S. Army small arms ranges and demolitions ranges limit minimum altitudes over certain areas adjacent to impact area.
	Air Drop	●	Same as above.
	Special Operations	●	Same as above.
	Intelligence, Surveillance, Reconnaissance	●	Same as above.

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Figure 2-36 **Air Force** Capability and Encroachment Assessment Detail (continued)

Claiborne Assessment Details

Range Mission Description

Claiborne Range is the primary training range (PTR) for the Air Force Reserve Command, 307th Bomb Wing, Barksdale AFB, Louisiana. It primarily provides electronic combat training to the Barksdale B-52s and air-to-ground sorties. Other users include Green Flag Exercise deployed assets such as A-10, F-16 and F/A-18 aircraft from the Air Force, Marine Corps Reserve and Air National Guard and Joint Terminal Attack Controllers (JTAC) initial and continuation training. Recently the range provided training to the Fort Polk Joint Readiness Training Center out-of-sector mission. The range also provides laser operations and testing capabilities.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strategic Attack	●	●			●	●	●	●	●			●	●
Counterair	●	●			●	●	●	●	●			●	●
Counterspace													
Counterland	●	●			●	●		●	●			●	●
Countersea													
Information Operations													
Electronic Combat Support	●	●			●	●	●	●	●			●	●
Command and Control	●	●			●	●	●	●	●			●	●
Air Drop													
Air Refueling													
Spacelift													
Special Operations	●	●			●	●	●	●	●			●	●
Intelligence, Surveillance, and Reconnaissance	●	●			●	●	●	●				●	●

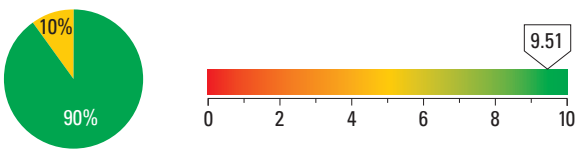
Legend: FMC ● PMC ● NMC ●

Encroachment Data

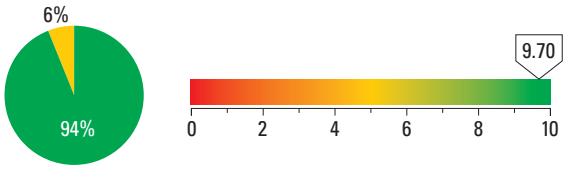
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strategic Attack	●	●	●		●	●	●	●	●	●		●
Counterair	●	●	●		●	●	●	●	●	●		●
Counterspace												
Counterland	●	●	●		●	●	●	●	●	●		●
Countersea												
Information Operations												
Electronic Combat Support	●		●		●	●		●	●	●		●
Command and Control	●	●	●		●	●	●	●	●	●		
Air Drop												
Air Refueling												
Spacelift												
Special Operations	●	●	●		●	●	●	●	●	●		●
Intelligence, Surveillance, and Reconnaissance	●	●	●		●	●	●	●	●	●		●

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

After the deactivation of the Claiborne Bombing and Gunnery Range's primary A-10 customer, the Air Force Reserve Command B-52 Formal Training Unit became the new primary customer. To increase utilization, electronic combat equipment was installed at the range to allow for Claiborne Bombing and Electronic Combat Range to provide additional capabilities to more customers.

Summary Observations

The Claiborne Bombing and Electronic Combat Range is authorized to occupy the National Forest System lands as outlined in the U.S. Forest Service Special Use Permit, dated 12 March 2004 and valid through 31 December 2022. Projected review and coordination for continue use will occur on/around 1 January 2020. There are no known encroachment issues beyond Munitions Restrictions.

Claiborne Assessment Details

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Capability Scores	6.56	6.56	7.86	6.67	6.67

According to F2011-0080-FDS000, Installation Report of Audit, Air Force Range Optimization, 307th Bomb Wing, Barksdale Air Force Base, Louisiana, dated 30 June 2011, flying hour optimization resulted that "Wing personnel could improve optimization of flying hours expended during training missions. The Air Force Audit Agency calculated the potential monetary benefit of $6,593,410 by reviewing the FY2010 EC usage of Lancer and Smoky Hill ranges for EC training (510 EC training usage). The Audit Agency then determined the usage of Claiborne Range if a threat emitter system was installed (255 EC training usage) equating to 306 reduced flying hours at a cost of $21,985 per flying hour ($6,727,410) minus estimated annual O&M cost of $134,000." As of 1 October 2013, Claiborne Bombing and Electronic Combat Range was equipped with the Joint Threat Emitter and the first successful test mission was conducted on 22 October 2013. The Multiple Threat Emitter System was added the range Table of Allowance. The range is in the process of getting frequencies authorized and hiring two equipment operators. The 307th Operations Support Squadron Airspace Office and Houston Air Route Traffic Control Center coordinated dimensions of a large piece of airspace above Warrior MOA. Effective 1 May 2014, CADDO Air Traffic Control Assigned Airspace (ATCAA), Flight Level 180-230, was implemented, which enhances B-52 training and reduce costs. This airspace will enable the B-52s to utilized the electronic combat equipment in close proximity to the range.

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Encroachment Scores	10.00	10.00	10.00	10.00	10.00

The Environmental Assessment (EA) of Increased Utilization and Expansion of the Claiborne Air-to-Ground Weapons Range was completed in March 2003. The airspace and land expansion was effective on 10 June 2004; airspace was Surface - FL140 and was increased to Surface to FL230, land expanded from 3207 acres to 7800 acres. The purpose of the expansion was to accommodate training requirements for the B-52 squadrons at Barksdale Air Force Base, Louisiana, and the introduction of new weapons systems. According to the EA, "Analyses conducted in the Environmental Assessment addressed potential effects on noise, safety, land use, geological resources, water resources, biological resources, and cultural resources. The analyses revealed that implementation of the proposed expansion would have no significant direct, indirect, or cumulative effects on the quality of the natural or human environment." The land expansion was designed by using existing roads and creeks as natural boundaries. Consideration of increasing the impact area (672 acres) has been briefly discussed. Barksdale Air Force Base initiated an Installation Encroachment Management Team (ICEMAP) in 2013. As active members, 307 OSS airspace and range staff reviewed possible encroachment issues and none were noted.

Claiborne Limitations Detail

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strategic Attack	●	The range boundaries are restrictive in nature due to its location in a U.S. national forest. No live weapon training is authorized. Due to the size of the range inert JDAM or LGB weapons cannot be dropped. No additional land can be acquired at this time.
Threats	Electronic Combat Support	●	The Joint Threat Emitter was installed at Claiborne before 1 October 2013. The radar equipment is running off a dial-up modem causing a delay in tracking aircraft. There will be two T-1 lines running from Fort Polk to Claiborne Range, fiber optics installed and a Longport to connect to Polk Approaches Radar (FAA has approved this process). Projected get-well date: 19 August 2014.
Scoring & Feedback System	Strategic Attack	●	Same as above.
	Counterair	●	Same as above.
	Electronic Combat Support	●	Same as above.
Range Support	Electronic Combat Support	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Munitions Restrictions	Strategic Attack	●	Due to the parameters set by the Weapons Danger Zone Tool, inert ordnance delivery is limited. The range is limited to the targets that B-52 customers may use. Expansion of the impact area would increase activity.
	Counterair	●	Same as above.
	Special Operations	●	Same as above.
	Intelligence, Surveillance, and Reconnaissance	●	Same as above.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Dare County Assessment Details

Range Mission Description

The Dare County bombing Range (DCBR) is the primary training location for the 4th Fighter Wing, Seymour Johnson AFB, NC. Besides providing bombing, gunnery and LASDT training for these F-15E aircrews, a multitude of Navy, Marine and Air National Guard units also use the range. The range is extremely popular with special operations (air and ground) and forward air control units from all Military Services for training personnel from across the U.S. and some foreign bases.

Capability Data

Mission Areas	Capability Attributes												
	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
Strategic Attack	●	●			●	●	●	●	●			●	●
Counterair	●	●			●	●	●	●	●			●	●
Counterspace													
Counterland	●	●			●	●	●	●	●			●	●
Countersea													
Information Operations	●	●			●	●	●	●	●			●	●
Electronic Combat Support	●	●			●	●	●	●	●			●	●
Command and Control	●	●			●	●	●	●	●			●	●
Air Drop													
Air Refueling													
Spacelift													
Special Operations	●	●			●	●	●	●	●			●	●
Intelligence, Surveillance, and Reconnaissance	●	●			●	●	●	●	●			●	●

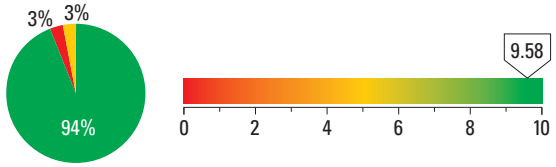
Legend: FMC ● PMC ● NMC ●

Encroachment Data

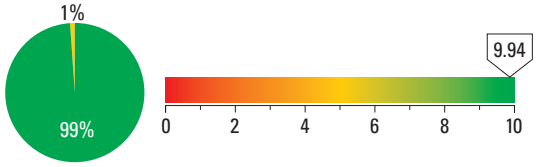
Mission Areas	Encroachment Factors												
	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Strategic Attack	●	●	●		●	●	●	●	●	●	●	●
Counterair	●	●	●		●	●	●	●	●	●	●	●
Counterspace												
Counterland	●	●	●		●	●	●	●	●	●	●	●
Countersea												
Information Operations	●	●	●		●	●	●	●	●	●	●	●
Electronic Combat Support	●	●	●		●	●	●	●	●	●	●	●
Command and Control	●	●	●		●	●	●	●	●	●	●	●
Air Drop												
Air Refueling												
Spacelift												
Special Operations	●	●	●		●	●	●	●	●	●	●	●
Intelligence, Surveillance, and Reconnaissance	●	●	●		●	●	●	●	●	●	●	●

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Dare County Assessment Details

Summary Observations	Summary Observations
DCBR does not have high-fidelity emitters. COCOMs are calling for CAF units to be prepared to fight and accomplish the mission in a contested/ degraded environment as future conflicts will most certainly require the destruction or mitigation of sophisticated surface to air threats to accomplish COCOM objectives. This requires high-quality training and feedback to assess maneuvers. Currently, 4 FW aircrew do not have the ability to conduct this level of training utilizing existing assets. DCBR must work with outside agencies (i.e., Navy) to schedule appropriate airspace and emitters to conduct this training. The 4 FW is advocating for a unmanned emitter(s) that can be remotely controlled/operated, can replicate multiple threats in one system, can switch between threats quickly, and have a mechanism for determining pK of shots based on jamming. This type of high fidelity emitter located on DCBR along with the ability to tie in our ACMI feed or Link-16 picture for targeting would significantly increase the threat fidelity. In addition to the emitter(s), contract support infrastructure would be required to operate and maintain the equipment. This type of threat and the feedback mechanism would provide all FTU students exposure to threats prior to combat deployments. Additionally, it would provide 4 FW and east coast DoD assets the ability to train in a complex EW environment and develop tactics to accomplish COCOM objectives.	The most significant encroachment issue DCBR is experiencing is the influx of wind energy companies wanting to build wind farms in the vicinity of the lateral boundaries of the range complex or the MTRs leading into the range complex. Wind farms would pose a significant impact to the training mission of the 4 FW and its ability to train F-15E students in the FTU and RAP requirements in the Ops squadrons. Mulitple wind turbines, extending up to 500' AGL would pose a flight safety risk to aircrew, due to the obstacles themselves as well as their potential to mask light civilian aircraft on the air-to-air radar. In addition, these wind farms would render R-5314 unusable for low-altitude air to air intercepts, a syllabus requirement for FTU students. Turbines would also create negative impacts on the ability for Ops and FTU aircrew to train to and utilize the F-15E Terrain Following Radar. The state of NC passed House Bill 484 which outlines the Wind Turbine Permitting Process. This Bill has assisted in preventing encroachment on DCBR.

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	9.95	9.95	9.59	10.00	10.00	**Encroachment Scores**	9.95	9.95	9.55	10.00	10.00
DCBR had threat emitters in the past, but they were low fidelity and did not provide an accurate pointing source. They also did not have a mechanism to provide the aircrew timely and accurate feedback on the effectiveness of maneuvering. The 4 FW recently utilized Wing funds in order to purchase an SA-6 replica with a rotator on it to provide some level of training to aircrew; however, it is not an emitter. In addition, reduced numbers of Red Flag Exercises and large force employment increases the need to be able to train to complex surface-to-air threats. The concept of "Backyard Ranges" and the continual growth of Exercise RAZOR TALON, necessitates increasing the complexity of DCBR. This area along the coast at DCBR and the Mid Atlantic EW Range is essential in creating complex EW scenarios that simulate the enemy order of battle. Over the next 3–5 years, this training requirement will continue to increase as aircrew work to ensure they can meet COCOM taskings.						Over the past 2–3 years, the threat of encroachment has increased significantly. Wind energy companies are looking at Eastern NC as a potential site for alternative energy exploitation. The unique geography of the land around DCBR provides this opportunity as possible sites. There are currently six proposed wind energy projects in the vicinity of DCBR, each of which pose a risk to the training mission of the F-15Es in the 4 FW at SJAFB. DoD, HAF, and ACC are partnering with the 4 FW to determine the impacts of these projects encroaching on the DCBR airspace. Airspace encroachment from wind energy companies will continue to be a factor in the next 3–5 years. The 4 FW, as owners of DCBR and several MTRs in Eastern NC, will continue to have to work with HHQ to articulate the impacts on training to the wind energy proponent and fight to protect our training airspaces. The state of NC and the laws protecting the military-utilized airspaces from wind energy encroachment will continue to prove necessary in the next 3–5 years or more.					

Dare County Limitations Detail

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Threats	Counterair	●	The range does not have high-fidelity emitters. Counterair and Counterland will almost certainly require the destruction or mitigation of surface to air threats in order to accomplish the mission. Currently, 4 FW aircrew must work with outside agencies to schedule appropriate airspace and emitters to conduct this training. The 4 FW is advocating for unmanned emitters that can be remotely controlled/operated, can replicate multiple threats in one system, can switch between threats quickly, and have a mechanism for determining probability of kill (pK) of shots based on jamming. A high fidelity emitter placed on DCBR would ensure that all F-15E aircrew in the FTU are exposed to real-life threats prior to deploying for combat, and would also allow the operational units to remain current against expected threat lay-downs prior to deployments.
	Counterland	●	Same as above.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Dare County Limitations Detail

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Scoring & Feedback System	Counterair	●	As noted previously, the 4 FW is advocating for unmanned emitters that can be remotely controlled/operated, can replicate multiple threats in one system, can switch between threats quickly, and have a mechanism for determining pK of shots based on jamming. This type of high fidelity emitter located on DCBR along with the ability to tie in the ACMI feed or Link-16 picture for targeting would significantly increase threat fidelity. Threat reactions against a real emitter provides outstanding training, but without a way to provide feedback to the air crew on maneuvers, the effectiveness of those maneuvers is difficult to determine. Installation of a high threat emitter and the associated feedback system also requires a robust contract support infrastructure to operate and maintain the equipment.
	Counterland	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Adjacent Land Use	Counterair	●	Plans for multiple turbine wind farms in close proximity to the range will have a moderate impact to training conducted by the 4 FW. The two major impacts involve a degradation to Terrain Following Radar (TFR) operations and a degradation to the F-15E Air-to-Air Radar when conducting Low Altitude Intercept Training. The wind turbines create clutter on the specific radar displays that cause confusion to students that affects training, and may ultimately impact the safety of the aircrew. The 4 FW is actively engaging with all wind turbine proponents to move wind turbine farms a specified distance away from the range. This will be an on-going issue with no specific remedy date.

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Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Draughon Assessment Details

Range Mission Description

Draughon Range supports daily air-to-ground sorties and electronic combat training. In addition, the range supports training for F-16 CMs, JASDF F-2s, helicopter infiltration/exfiltration exercises, SERE training and SFS 40mm grenade launcher initial qualification training.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strategic Attack	R	Y			Y	Y	G	G			Y		Y
Counterair													
Counterspace													
Counterland	Y	Y			Y	Y	G	G		Y	Y		Y
Countersea													
Information Operations	Y	Y	G		G	G	G	G			G		G
Electronic Combat Support	Y	Y	G		G	G	G	G			G		G
Command and Control													
Air Drop	G	Y	G		G	Y	G	G			G		Y
Air Refueling													
Spacelift													
Special Operations													
Intelligence, Surveillance, and Reconnaissance													

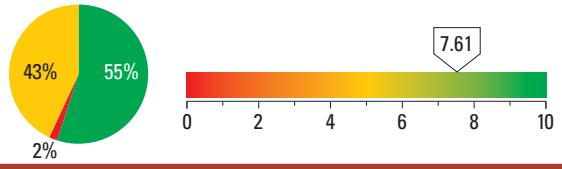
Legend: FMC (G) PMC (Y) NMC (R)

Encroachment Data

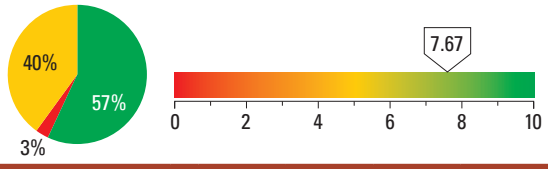
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strategic Attack	G	G	Y	G	Y	G	Y	R	Y	G	G	Y
Counterair												
Counterspace												
Counterland	G	G	Y	G	Y	G	Y	R	Y	G	G	Y
Countersea												
Information Operations	G	G	Y	G	Y	G	Y	Y	G	G	G	Y
Electronic Combat Support	G	G	Y	G	Y	G	Y	Y	G	G	G	Y
Command and Control												
Air Drop	G	G	Y	G	G	G	Y	Y	G	G	G	Y
Air Refueling												
Spacelift												
Special Operations												
Intelligence, Surveillance, and Reconnaissance												

Legend: Minimal (G) Moderate (Y) Severe (R)

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

The limiting capability attribute to Draughon Range is the limited landspace. The relatively small area of land cannot contain modern weapons' danger zones. Due to this limitation, the two 35 FW Fighter Squadrons are required to go TDY in order to train with full scale modern munitions. Local training is conducted by simulating the release of such modern weapons against simulated targets in off-range areas. This directly impacts all air-to-surface training mission areas.

Summary Observations

The construction of 82 wind turbines inside the Daughon Range Positive Control Airspace is the largest encroachment factor. Large wind turbines restrict low level ingress routes and adversely affect low altitude combat training on Draughon Range. The impacted mission areas include, but are not limited to, strategic attack and counterland missions. Current Electronic Spectrum approval is valid for only one year. The requirement to renew the electronic spectrum approval each year limits future growth coordination for permanent construction and airspace solutions. The impacted mission areas include, but are not limited to, electronic combat support and information operations mission areas.

Draughon Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	N/A	N/A	N/A	N/A	5.65	**Encroachment Scores**	N/A	N/A	N/A	N/A	7.58
The wind turbine construction inside the Draughon Range Positive Control Airspace degrades the training capability of the range and highlights a loss to encroachment pressures. Overall, the encroachment assessment score and the capabilities assessment value increased due to the following factors: implementation of the GAICHO Altitude Reservation (ALTRV), the potential for the GAICHO Training Reserve Airspace (TRA), the potential expansion of the Draughon TRA, the introduction and integration of the Joint Deployable Electronic Warfare Range (JDEWR) on Draughon Range and the GoJ's approval of the JDEWR electronic spectrum. The two 35 FW fighter squadrons are assigned the primary role of Air-to-Air and Suppression of Enemy Air Defenses (SEAD). The wind-turbine construction encroachments on Draughon Range generated GoJ discussions regarding future growth capability to include, but not limited to, expanding the current Draughon PCA and re-designating ALTRV GAICHO as a Training Reserve Airspace to allow bilateral training. The 35 FW is concerned about the construction of the wind turbines inside the Draughon Range Positive Control Airspace. Overall scores changed due to the implementation and operational use of the JDEWR and increased communication with GoJ, USFJ, 5 AF and 3 AW counterparts regarding training impacts, airspace expansion and the future growth way-ahead.						The wind turbine construction inside the Draughon Range Positive Control Airspace degrades the training capability of range and highlights a loss to encroachment pressures. Overall, the encroachment assessment score and the capabilities assessment value increased due to the following factors: implementation of the GAICHO Altitude Reservation (ALTRV), the potential for the GAICHO Training Reserve Airspace (TRA), the potential expansion of the Draughon TRA, the introduction and integration of the Joint Deployable Electronic Warfare Range (JDEWR) on Draughon Range and the GoJ's approval of the JDEWR electronic spectrum. The two 35 FW Fighter Squadrons are assigned the primary role of Air-to-Air and Suppression of Enemy Air Defenses (SEAD). The wind-turbine construction encroachments on Draughon Range generated GoJ discussions regarding future growth capability to include, but not limited to, expanding the current Draughon PCA and re-designating ALTRV GAICHO as a Training Reserve Airspace to allow bilateral training. The 35 FW is concerned about the construction of wind turbines inside the Draughon Range Positive Control Airspace. Overall. scores changed due to the implementation and operational use of the Joint Deployable Electronic Warfare Range and increased communication with GoJ, USFJ, 5 AF and 3 AW counterparts regarding training impacts, airspace expansion and the future growth way-ahead.					

Draughon Limitations Detail

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strategic Attack	🔴	The limited landspace cannot contain danger zones for modern weapons except from very limited attack axes against non-representative targets for strategic attack. Training is conducted "dry" against simulated targets in off-range areas. No further mitigation anticipated. The 35 FW is working with USFJ/GOJ Joint Committee to revise outdated rules and eliminate unnecessary restrictions.
	Counterland	🟡	Same as above.
	Information Operations	🟡	The range's limited land area constrains the 35 FW's ability to distribute threat systems on a scale to mirror today's realistic enemy electronic order of battle. The emitters on Draughon Range are densely located on a single axis. Misawa AB implementation of the JDEWR affords the 35 FW some flexibility in placement of enemy ground threat emitters. Re-designating the GAICHO ALTRV to a GAICHO TRA and implementing the Draughon TRA in conjunction with continued GoJ's approval of the JDEWR electronic spectrum frequencies and bilateral training opportunities with JGSDF I-HAWK and Patriot systems will maximize the limited land-space of the current Draughon Range PCA.
	Electronic Combat Support	🟡	Same as above.
Airspace	Strategic Attack	🟡	The restricted size and time for use of restricted airspace and PCA limits the ability to realistically train to the Strategic Attack and Counterland mission areas. Additional coordination for adjacent airspace is required to effectively utilize the range airspace for said mission areas. Efforts continue to expand the Draughon PCA.
	Counterland	🟡	Same as above.
	Information Operations	🟡	Same as above.
	Electronic Combat Support	🟡	Same as above.
	Air Drop	🟡	Same as above.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Draughon Limitations Detail

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Targets	Strategic Attack	●	The limited range size constrains the ability to simulate strategic targets on the range. Using Draughon Range by itself does not allow for a large enough distance to train for Strategic Attack. Upgrading the GAICHO ALTRV to a TRA, which is adjacent to Draughon Range and working area MOAs would allow for longer and more realistic Strategic Attack training. Training is currently conducted "dry" against simulated targets in off-range areas.
	Counterland	●	Same as above.
Threats	Strategic Attack	●	The range continues to increase visual simulation of threat systems. Draughon Range built a simulated SA-6, SA-3 and AAA formation. The straight flush radar includes the following features: skid mounted, rotating dish, copper coating, green top coat with camouflage pattern. Draughon Range is currently constructing an SA-2BF site.
	Counterland	●	Same as above.
	Air Drop	●	Same as above.
Small Arms Ranges	Counterland	●	Draughon Range only has capability for 40mm grenade launcher training due to Host Nation restrictions. While surface area into water is available, the range is technically "Misawa Air-to-Ground Range" in USFJ/GOJ Joint Committee agreements and the host nation will not approve ground fire of projectile ammunition. At this time, this is not a priority for the 35th Fighter Wing.
Collective Ranges	Strategic Attack	●	The limited range size constrains the ability to simulate strategic targets on the range. Using Draughon Range by itself does not allow for a large enough distance to train for Strategic Attack. Upgrading the GAICHO ALTRV to a TRA, which is adjacent to Draughon Range and working area MOAs would allow for longer and more realistic Strategic Attack training. Training is currently conducted "dry" against simulated targets in off-range areas.
	Counterland	●	Same as above.
Suite of Ranges	Strategic Attack	●	Strategic Attack and Counterland Operations are primarily limited by airspace, landspace, targets and threats (in that order). Coordination for additional airspace is required to conduct strategic attack and counterland operations. Upgrading the GAICHO ALTRV to a TRA, which is adjacent to Draughon Range and working area MOAs, allows for longer and more realistic Strategic Attack training. Training for Strategic Attack and Counterland operations are primarily conducted "dry" against simulated targets in off-range areas.
	Counterland	●	Same as above.
	Air Drop	●	The overall air and landspace of Draughon Range limits the ability to conduct large collective Air Drop training. Additional airspace is required to accommodate requests to incorporate an Air Drop onto Draughon Range. At this time, this is not a priority for the 35th Fighter Wing.

Draughon Limitations Detail

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Spectrum	Strategic Attack	●	The host nation restrictions require the GoJ Minister of Interior Communications (MIC) to approve all electronic spectrum frequencies used in Japan. The waiver approval is good for only one year. The DEWR requires designated frequency bands to employ in support of USAF/JASDF flying operations. The requested band frequencies support the JDEWR threat kits required to replicate enemy ground threat systems. Approval of the requested frequency bands allow Misawa AB to execute the 35 FW's primary Suppression/Destruction of Enemy Air Defense missions and affords future joint/bilateral Air Training Relocation (ATR) growth capability. Without the approved frequencies, Misawa AB's ability to train against enemy ground threat systems is limited to off-station training: Red Flag-AK and GoJ supported ATRs. PACAF and USFJ are advocating for a five year frequency clearance waiver to operate joint threat emitters in Northern Japan, which would allow for future growth bilateral and joint growth.
	Counterland	●	Same as above.
	Information Operations	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Air Drop	●	Same as above.
Airspace	Strategic Attack	●	Actual restricted airspace is limited and supplemented with a range "Positive Control Area" (PCA) sanitized by Misawa AB radar approach control facility. Under Host Nation rules, the PCA area is available for hazardous activities (laser/weapons transit), but extent of the PCA is limited due to proximity of Misawa AB (10nm South), the JGSDF restricted area, and commercial air routes. Efforts are underway to extend PCA with additional volume for limited operating times to accommodate specialized training (exercise CAS scenarios and IAM weapons employment). Weapons employment is further restricted by the USFJ/GOJ Joint Committee agreement on range restrictions, originally established in 1952. The agreement specifies authorized weapons and attack restrictions which do not account for increased weapon capability and weapon safety analysis. Efforts are underway to modify the Joint Committee agreement on range restrictions, but are challenging due to Host Nation cultural/social paradigms.
	Counterland	●	Same as above.
	Information Operations	●	Same as above.
	Electronic Combat Support	●	Same as above.
Noise Restrictions	Strategic Attack	●	Operating hours of the range are limited by USFJ/GOJ Joint Committee agreement on use restrictions, which were originally established in 1952. The range cannot be used after 2000L during Fall-Spring and 2200L during summer. Operations from 2000–2200L are limited in total number per month. Efforts are underway to amend restrictions, but are challenging due to Host Nation cultural/social paradigms.
	Counterland	●	Same as above.
	Information Operations	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Air Drop	●	Same as above.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Draughon Limitations Detail

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Adjacent Land Use	Strategic Attack	🔴	GoJ is permitting the construction of 82 proposed wind turbines within the Daughon Range. If the wind turbine construction continues, the 35 FW will lose combat training capability. Specifically, large wind turbines restrict low level ingress routes and adversely affect low altitude combat training on Draughon Range. Each year the 35 FW deploys to Alaska to accomplish electronic warfare range training, but now has the capability to accomplish this training on Draughon Range. The 35 FW plans to swap its deployed training focus from EW training to Air-to-Ground training while in Alaska. Furthermore, the GoJ will prohibit development of all wind turbines and any structure >200' without prior 35 FW coordination. The GoJ is going to fund a reconfiguration of Draughon Range to allow the tactical pop pattern to be rotated 20 degrees counter-clockwise to allow aircraft to maneuver around the wind turbine construction. The GoJ also approved an upgrade of GAICHO airspace from ALTRV to TRA to increase the effectiveness EW training.
	Counterland	🔴	Same as above.
	Information Operations	🟡	Same as above.
	Electronic Combat Support	🟡	Host nation restrictions require the GoJ MIC to approve all electronic spectrum frequencies used in Japan. The waiver approval is good for only one year. The JDEWR requires designated frequency bands to employ in support of USAF/JASDF flying operations. The requested band frequencies support the JDEWR threat kits required to replicate enemy ground threat systems. Approval of the requested frequency bands allow Misawa AB to execute the 35 FW's primary Suppression/ Destruction of Enemy Air Defense missions and affords future joint/bilateral ATR growth capability. Without the approved frequencies, Misawa AB's ability to train against enemy ground threat systems is limited to off-station training: Red Flag-AK and GoJ supported ATRs. PACAF and USFJ are advocating for a five year frequency clearance waiver to operate joint threat emitters in Northern Japan will allow for future growth bilateral and joint growth.
	Air Drop	🟡	Same as above.
Cultural Resources	Strategic Attack	🟡	Formal constraints are minimal, but as a jointly operated range with JASDF, discovery of cultural sites is handled on a case-by-case basis. Land area around the range is a historical site of the regional Nanbu clan activities in Northern Japan. If cultural resources are discovered in areas close to target areas, archeological assessments may potentially reduce operating availability. No further mitigation planned.
	Counterland	🟡	Same as above.
Range Transients	Strategic Attack	🟡	Draughon Range includes littoral waters. The use of the range requires sanitization of the littoral waters to ensure the area is clear of transients and fishing boats. There is no additional mitigation planned beyond current observation from additional manned sites on Draughon Range.
	Counterland	🟡	Same as above.
	Information Operations	🟡	Same as above.
	Electronic Combat Support	🟡	Same as above.
	Air Drop	🟡	Same as above.

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Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Edwards Flight Test Range (EFTR) Assessment Details

Range Mission Description

The range at Edwards AFB is the AFMC center of excellence for research, development, test and evaluation, and training of aerospace systems for the United States and its allies. The combat, combat support and training capabilities of most of the Air Force's weapons systems were first proven at the Edwards Flight Test Range, giving the 412 Test Wing a direct, tangible link to each of the Air Force's core competencies. To support this, the 412 TW operates and manages the Edwards Flight Test Range (EFTR).

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strategic Attack	PMC	FMC			PMC	PMC	FMC	FMC	FMC	FMC	FMC		FMC
Counterair	PMC	FMC			PMC	PMC	FMC	FMC	FMC	FMC	FMC		FMC
Counterspace		FMC					FMC		FMC				
Counterland	PMC	FMC			FMC	PMC	FMC	FMC	FMC	FMC	FMC		FMC
Countersea													
Information Operations	FMC	FMC					FMC	FMC	FMC				FMC
Electronic Combat Support	FMC	FMC			FMC	FMC	FMC	FMC	PMC		FMC		FMC
Command and Control	FMC	FMC			FMC	FMC	FMC	FMC	FMC		FMC		FMC
Air Drop	FMC	FMC			FMC	PMC	FMC	FMC	FMC		FMC		FMC
Air Refueling	FMC	FMC				FMC	FMC		FMC				FMC
Spacelift		FMC					FMC		FMC				
Special Operations	PMC	FMC			PMC	FMC	FMC	FMC	FMC	FMC	FMC		FMC
Intelligence, Surveillance, and Reconnaissance	FMC	FMC			FMC	PMC	FMC	FMC	FMC		FMC		FMC

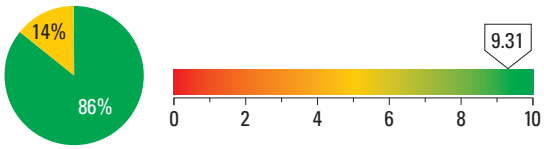
Legend: FMC, PMC, NMC

Encroachment Data

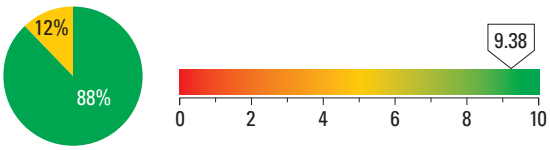
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strategic Attack												
Counterair												
Counterspace												
Counterland												
Countersea												
Information Operations												
Electronic Combat Support	Minimal		Moderate	Minimal	Minimal							Minimal
Command and Control			Minimal		Minimal							
Air Drop	Moderate	Minimal			Minimal	Minimal		Minimal	Minimal			Minimal
Air Refueling					Minimal							Minimal
Spacelift												
Special Operations												
Intelligence, Surveillance, and Reconnaissance												

Legend: Minimal, Moderate, Severe

Capability Chart and Scores



Encroachment Chart and Scores



Edwards Flight Test Range (EFTR) Assessment Details

Summary Observations	Summary Observations
This assessment addresses the capabilities of the Edwards Flight Test Range (EFTR) and the 412 Range Squadron, Edwards AFB, CA in support of the Test and Evaluation (T&E) mission. For the purpose of this assessment the EFTR is defined as the airspace within the R-2515 Restricted Airspace above the 301,000 acres of DoD and withdrawn land making up the Edwards AFB Reservation and the range instrumentation array. While the 412th RANS is the Range Operating Agency (ROA) as defined in AFI 13-212, the entire EFTR is a compilation of capabilities within the 412 Test Wing operating under the AF Test Center (AFTC). It is also important to note that the EFTR does not operate as a stand-alone entity, but as a component of the DoD Southwest Complex which includes EFTR, Ventura County NAS (Pt Mugu), China Lake NAS, Nellis Test and Training Range, Utah Test and Training Range, White Sands Missile Range and Vandenberg AFB. As such, the complementary capabilities of these ranges allow the EFTR to operate at the fully mission capable level over all T&E mission areas. Overall, the EFTR is in good shape concerning Suite of Ranges, Collective Ranges, Range Support, Infrastructure, Scoring, and Airspace. There are potential medium risk concerns associated with Landspace in terms of size, Targets from a strategic attack and counterair perspective, and threats primarily in the areas of strategic attack, counterair, and Intelligence, Surveillance and Reconnaissance.	EFTR does not currently have an "assigned training mission", but is equipped to support training activity. The range is occasionally utilized by tenant commands and other services for proficiency activity to include airdrop and inert weapons release. The Encroachment Factors such as Threatened and Endangered Species and Cultural Resources have been previously mitigated and cause minimal impact on the limited training activity that is currently conducted on the EFTR.

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	7.02	7.02	7.02	N/A	8.83	**Encroachment Scores**	8.43	8.43	9.25	N/A	8.43
Overall capability scores have historically remained the same over the last three years with only slight variation (CY 20012, 2013, and 2014).						Overall encroachment assessment for training activity scores have historically remained the same over the last three years with only slight variation (CY 20012, 2013, and 2014).					

Edwards Flight Test Range (EFTR) Assessment Details

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strategic Attack		The existing range area can support most types of gravity and precision guided munitions. The landspace is not adequate for the employment of large footprint weapons such as JSOW, SDB, etc. While there are restrictions with certain types of weapons training, impacts can be mitigated through coordination with DoD Southwest Range partners.
	Counterair		The existing range area can support most types of counterair training. The range space is not adequate for the employment of large footprint air to air/ground to air weapons such as AIM-9 and AIM-120. While there are restrictions with certain types of weapons training, impacts can be mitigated through coordination with DoD Southwest Range partners.
	Counterland		The existing range area can support training of some Counterland systems. The landspace is not adequate for the employment of large footprint weapons or training of some platforms such as the AC-130 using live munitions. While there are restrictions with certain types of weapons training, impacts can be mitigated through coordination with DoD Southwest Range partners.
	Special Operations		The existing range area can support training of most types of Special Operations Systems. The landspace is not adequate for the employment of large force activities or live fire training of some Special Operations platforms such as the AC-130. While there are restrictions with certain types of weapons training, impacts can be mitigated through coordination with DoD Southwest Range partners.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Edwards Flight Test Range (EFTR) Assessment Details

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Targets	Strategic Attack	●	The 412th RANS has numerous target arrays which can support most aspects of the Strategic Attack mission area. In addition, the range's Command and Control System/Facility has the ability to generate airborne and ground threat scenarios and targets for distribution to participants via Link-16 and SADL. Specific target requirements such as hardened bunkers and MOUT facilities are not available but can be built with customer funding. While there are restrictions with certain types of weapons training, impacts can be mitigated through coordination with DoD Southwest Range partners.
	Counterair	●	The EFTR cannot support counterair training activities requiring the employment of large footprint air to air/ground to air weapons such as AIM-9 and AIM-120. While there are restrictions with certain types of weapons training, impacts can be mitigated through coordination with DoD Southwest Range partners. Additionally, the range's Command and Control System/facility has the ability to generate airborne and ground threat scenarios for distribution to participants via Link-16 and SADL.
	Special Operations	●	The 412th RANS has numerous target arrays which can support aspects of the Special Operations mission area. Specific target requirements such as urban environments and related facilities are not available but can be built with customer funding. While there are restrictions with certain types of weapons training, impacts can be mitigated through coordination with DoD Southwest Range partners.
Threats	Strategic Attack	●	The EFTR has the ability to present threat scenarios using ground moving targets such as armor and static airfield configurations with AAA sites. In addition, the range's Command and Control System/Facility has the ability to generate airborne and ground threat scenarios for distribution to participants via Link-16 and SADL. The EFTR does not include active threat system such as radars, Smokey SAMS, IR simulators, etc. These types of assets are available to our programs on a scheduled basis through the AFFTC/NAWCWPNS alliance at the Electronic Combat Range China Lake and from other DoD Southwest Range partners. It is also possible for users to bring mission specific threat systems on range as necessary to meet their training requirements.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Air Drop	●	Same as above.
	Intelligence, Surveillance and Reconnaissance	●	Same as above.
Range Support	Electronic Combat Support	●	The 412 RANS does not directly manage and control threat systems, but these assets are available to training participants on a scheduled basis through the AFFTC/NAWCWPNS alliance at the Electronic Combat Range China Lake. The reduced availability of RF Spectrum due to transfer of DoD frequency allocations to the private sector along with impacts to the local noise floor by 802.11 devices may impact the range's ability to support open air training with EW related systems in a realistic environment.

Edwards Flight Test Range (EFTR) Assessment Details

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Threatened & Endangered Species	Air Drop	●	The presence of protected species and habitat (such as the desert tortoise) restricts personnel, vehicles, and ground target movement on the bombing range. This limits the ability to place sensors, targets, etc. in ideal locations. Fenced mitigation areas are in place, but may not account for 100% of the tortoise population. Pre-surveys may be required prior to ground-disturbing activities. Impacts are mitigated through isolating protected species from bombing ranges using special fencing, and developing animal tracking and monitoring systems using SBIR funds. The existence of species on the installation have the potential to constrain or even halt the mission. A federally-listed species such as the desert tortoise, if impacted in a negative way by a training mission, could constrain or halt the mission in a long or short term way pending resolution of the impact to the species.
Spectrum	Electronic Combat Command	●	The 412 TW has limited spectrum. Encroachment has severe impacts, including limitation or elimination of GPS jamming and anti-jamming techniques on open-air ranges due to potential interference with commercial GPS users. The limited spectrum has forced a greater than expected reliance on modeling and simulation. In some instances, testing can be done at night and/or in anechoic chambers that have been modified to support GPS constellations.

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Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Eglin Test and Training Complex (ETTC) Assessment Details

Range Mission Description

The Eglin Test and Training Complex (ETTC), provides full support and infrastructure for Developmental Test &Evaluation (DT&E), Operational Test & Evaluation (OT&E), and multi-Service training activities (including AFSOC, 7th Special Forces Group (Airborne), 6 Ranger Training Battalion, the Navy EOD School, Navy Training Wings 5 and 6, and the Alabama Army National Guard). The Eglin MRTFB is designated the test and evaluation center for Air Force air-delivered weapons, navigation and guidance systems, Command and Control (C2) systems, and Air Force Special Operations Command systems. The 96 TW also provides planning, facilities, and infrastructure support for developmental organizations, such as the Air Force Research Laboratory (AFRL) and Defense Threat Reduction Agency (DTRA).

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strategic Attack	PMC	PMC	FMC	FMC	FMC	PMC	PMC	PMC	FMC	FMC	FMC	PMC	PMC
Counterair	FMC	PMC	FMC		FMC	PMC	PMC	PMC	FMC		FMC	PMC	PMC
Counterspace	FMC	PMC	PMC		PMC	PMC	FMC		FMC				
Counterland	PMC	PMC	FMC		FMC	PMC	PMC	PMC	FMC	FMC	FMC	PMC	PMC
Countersea	FMC	FMC	FMC	FMC	PMC	FMC	FMC		FMC				
Information Operations	FMC	FMC	FMC		PMC		PMC	PMC	FMC				
Electronic Combat Support	FMC	FMC	FMC		FMC	PMC	FMC	PMC	FMC		FMC		
Command and Control	FMC	FMC	FMC		FMC	PMC	FMC	FMC	FMC			PMC	PMC
Air Drop	FMC	FMC	FMC			FMC	FMC	FMC	FMC				
Air Refueling	FMC	FMC	FMC					FMC	FMC				
Spacelift	FMC	FMC	FMC				FMC	PMC	PMC				
Special Operations	PMC	PMC	FMC		PMC	PMC	PMC	FMC	FMC	FMC	FMC	PMC	PMC
Intelligence, Surveillance, and Reconnaissance	FMC	FMC	FMC		FMC	PMC		FMC	FMC				

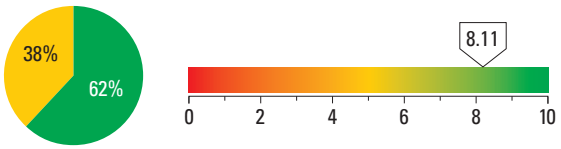
Legend: FMC, PMC, NMC

Encroachment Data

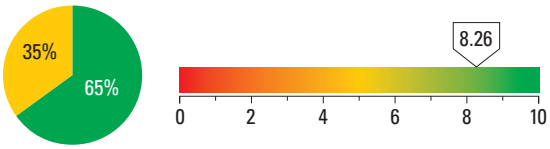
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strategic Attack	PMC	FMC	PMC	PMC	FMC	FMC	PMC	PMC	PMC	FMC	FMC	FMC
Counterair	PMC	FMC	PMC	PMC	FMC	FMC	PMC	PMC	PMC	FMC	FMC	FMC
Counterspace	PMC	FMC	PMC	PMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC
Counterland	PMC	PMC	PMC	PMC	PMC	FMC	PMC	PMC	PMC	FMC	PMC	FMC
Countersea	PMC	PMC	PMC	PMC	PMC	FMC	FMC	PMC	PMC	FMC	FMC	PMC
Information Operations	FMC	FMC	PMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC
Electronic Combat Support	FMC	FMC	PMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC
Command and Control	FMC	FMC	PMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC
Air Drop	PMC	FMC	PMC	FMC	FMC	FMC	FMC	FMC	PMC	FMC	PMC	FMC
Air Refueling	FMC	FMC			FMC	FMC	FMC	FMC	FMC	FMC		FMC
Spacelift												
Special Operations	PMC	PMC	PMC	PMC	PMC	FMC	PMC	FMC	PMC	FMC	PMC	FMC
Intelligence, Surveillance, and Reconnaissance	FMC	FMC	PMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC	PMC	FMC

Legend: Minimal, Moderate, Severe

Capability Chart and Scores



Encroachment Chart and Scores



Eglin Test and Training Complex (ETTC) Assessment Details

Summary Observations	Summary Observations
Strategic Attack, Counterland, and Special Operations are the most affected Mission Areas because they have many training requirements in common. The primary restrictions come in the Threats and Infrastructure areas due to the fact that the ETTC is an MRTFB asset and many of its resources are primarily focused on test and evaluation. Most of the threats are based upon test requirements; however, there is a small suite of threats specifically available for Special Operations training. In general, the BRAC-directed relocation of the 7SFG and establishment of a JSF Training Center at Eglin will significantly increase the overall training assets and infrastructure on the ETTC.	Although the dwindling availability of Spectrum is the most pervasive problem facing the training community at ETTC, the internal encroachment of growing operational restrictions from environmental and cultural resource concerns has the most potential for serious constraints on the future of training capabilities.

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Capability Scores	8.50	8.50	8.42	8.03	8.07

Availability of Spectrum continues to be a concern, and the primary approach to reducing its impact has been to improve Frequency Management equipment and procedures, and to attempt to acquire instrumentation and communication equipment that use less bandwidth or different bandwidths.

The Gulf Regional Airspace Strategic Initiative (GRASI) Landscape Initiative will provide a plan to better utilize available special use airspace by diverting some non-hazardous training activities to nearby state and national forests. This should ease some of the airspace concerns identified in this report. However, beddown of the Joint Strike Fighter (JSF) training program and significant increases in AFSOC flying activity will probably still stress the airspace capacity of the ETTC in the 3–5 year future.

When 7SFG(A) livefire ranges are completed (most are at this time), much of the Suite of Ranges shortfalls will be resolved, and part of the MOUT facility deficiency will be eliminated. AFSOC has plans to construct additional MOUT facilities in the outyears.

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Encroachment Scores	8.52	8.52	8.52	8.42	8.49

Availability of Spectrum continues to be a concern, and the primary approach to reducing its impact has been to improve frequency management equipment and procedures, and to attempt to acquire instrumentation and communication equipment that use less bandwidth or different bandwidths. The Gulf Regional Airspace Strategic Initiative (GRASI) Landscape Initiative will provide a plan to better utilize available special use airspace by diverting some non-hazardous training activities to nearby state and national forests. This should ease some of the airspace concerns identified in this report; however, beddown of the Joint Strike Fighter (JSF) training program and significant increases in AFSOC flying activity will probably still stress the airspace capacity of the ETTC in the next 3–5 years. Overall projected status should remain essentially the same for the future, unless Outer Continental Shelf oil and gas drilling is expanded to the point that the Military Mission Line, in the Gulf of Mexico, is moved eastward.

Eglin Test and Training Complex (ETTC) Assessment Details

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strategic Attack		There is inadequate land space to accommodate some large footprint weapons. Some long range standoff weapons currently require flight termination systems or must be released over Eglin's water range. Some can only be used at non-realistic airspeeds and/or altitudes, or inert munitions may need to be substituted. A "Next Generation" proposal for a remote impact area in a sparsely populated area near the Florida coast is being reviewed for resubmission. This solution would provide a large water-to-land corridor that would enable the overwater launch and subsequent land impact of almost any long range standoff weapon in development or in the inventory.
	Counterland		Current landspace available to conduct large footprint weapons releases has been reduced by construction of BRAC-directed 7SFG(A) support facilities at the north-center part of the Eglin Land Range and a public highway along the south-central part of the Range. The potential large number of JDAM and GBU drops during JSF training ops may seriously stress the capacity of Air-to-Surface impact areas on Eglin. Fewer long range standoff weapons can be dropped over land without flight termination systems, or they must be released over Eglin's water range. The number of desired JSF munitions drops may need to be revised downward, or inert munitions may be dropped over Eglin's water range. The desired number of munitions releases during JSF training is being reviewed but an anticipated date of completion is unknown at this time. The large footprint weapon problem is also being studied (see above comment).
	Special Operations		Restricted airspace above ground targets will become more congested from the 7th SFG(A) and JSF impact on the MRTFB. Special Ops flight training will be restricted to smaller pieces of airspace resulting in less realistic training and missed planned training. The Gulf Regional Airspace Initiative (GRASI) Landscape Initiative is developing process to use other Federal and State lands for many of the non-hazardous Training activities that are currently conducted in Eglin's Special Use Airspace. Plan should be ready for implementation during FY15.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Eglin Test and Training Complex (ETTC) Assessment Details

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Airspace	Strategic Attack	●	Integration of the BRAC-directed JSF training activities at Eglin, additional training requirements at Tyndall AFB and NAS Pensacola, expansion of oil/gas drilling, and projected growth in civilian general aviation activities are resulting in increased competition for existing airspace between training, test, and civilian use, while the amount of SUA available for weapons releases is shrinking due to oil/gas drilling in the ETTC and encroachment on the Land Range. The Gulf Regional Airspace Strategic Initiative provided a macro-level perspective of available airspace and recommended approaches to use it most effectively. Updated Mission Impact Analyses concerning oil/gas drilling in the Gulf are provided to the DoD Executive Agent for OCS activities on a regular basis. These analyses provide a basis for maintaining the current Military Mission Line and preserving the DoD's ability to test and train in the Gulf.
	Counterair	●	Same as above.
	Counterspace	●	Airspace over ETTC is inadequate for very large scale counterspace test and training operations. Airspace over the Gulf is adequate for many, but not all, such operations. There is no planned action at this time. The Pacific Missile Range can be used for very large scale counterspace operations.
	Counterland	●	Restricted airspace above ground targets will become more congested from the 7th SFG(A) and JSF impact on the MRTFB. Special Ops flight training will be restricted to smaller pieces of airspace resulting in less realistic training and missed planned training. The Gulf Regional Airspace Initiative (GRASI) Landscape Initiative is developing processes to use other Federal and State lands for many of the non-hazardous Training activities that are currently conducted in Eglin's Special Use Airspace. Airspace modeling by Virginia Tech indicates without relief of nonhazardous ops from the restricted area, a higher percentage of user missions will not get accomplished. Anticipated implementation date of the Landscape Initiative is FY15.
	Special Operations	●	Same as above.
Seaspace	Counterspace	●	The seaspace in ETTC is inadequate for very large scale counterspace test and training operations. Seaspace over the Gulf is adequate for many, but not all, such operations. There is no planned action at this time. The Pacific Missile Range can be used for very large scale counterspace operations.
Targets	Counterspace	●	Mid-to-high altitude targets are limited by the net explosive weight of propellant used. Santa Rosa Island (SRI) provides launch capability for mid-to-high altitude targets. Endo-atmospheric probes have been launched from SRI, but again the overall capabilities are limited by the net explosive weight of the propellant used. Site D-3 was selected as a candidate for a Space Port Florida launch site.
	Countersea	●	No undersea targets are available except those provided by training customers for specific programs. Customers must provide their own undersea targets and instrumentation. Land and sea targets are available. There is no planned action; customers will continue to supply their own undersea targets.
	Information Operations	●	Same as above.
	Special Operations	●	Targets sets available to Spec Ops are static and unrealistic. These targets do not represent what personnel will encounter during combat operations, resulting in poor reactions to real world situations. There is no planned resolution; customers will continue to supply their own targets.
Threats	Strategic Attack	●	There are few representative EC emitters. SRI has numerous EC emitters, but few are representative of those faced by our forces. Also, the range lacks Opposing Force capability and battlefield effects simulators. There is no current program to upgrade existing EC emitters or acquire training threat simulators.
	Counterair	●	Same as above.
	Counterspace	●	Same as above.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Command and Control	●	There are no viable threat emitters or simulators for this area. Net-centric weapons and UAS activities require a limited set of emitters/simulators. There is no action planned beyond identifying the minimum set of threats needed in this area. Customers will continue to provide their own system-specific threats.
	Special Operations	●	Same as Strategic Attack.
	Intelligence, Surveillance, Reconnaissance	●	Same as Command and Control.

Eglin Test and Training Complex (ETTC) Assessment Details

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Scoring & Feedback System	Strategic Attack	🟡	Scoring and feedback systems are inadequate to support certain training and exercise operations. There are no state-of-the-art facilities to support training reconstruction or facilities to allow for deployment of large forces (both air and ground) into the range. Multiple sources of TSPI are currently available but some are not compatible with deployed aircraft. The new Joint Test and Training Operations Control Center (JTTOCC) incorporates numerous tracking capabilities, but not training/exercise mission reconstruction and analysis.
	Counterair	🟡	Same as above.
	Counterland	🟡	Same as above.
	Information Operations	🟡	Same as above.
	Special Operations	🟡	Scoring and feedback systems do not exist on most ranges used by AFSOC. Personnel provide their own scoring which can lead to errors. There is no independent recordkeeping or analyst, which prevents Commanders from identifying trends and implementing corrective measures. There are no planned actions at this time.
Infrastructure	Strategic Attack	🟡	There are inadequate facilities to support deployed assets, resulting in inefficient use of deployed assets due to the need to use available facilities which may not have the full range of features needed by deployed units. An Exercise Support Facility would help mitigate this shortfall, but is currently unfunded.
	Counterair	🟡	Same as above.
	Counterland	🟡	Same as above.
	Information Operations	🟡	Same as above.
	Electronic Combat Support	🟡	There are inadequate systems to meet needs of some training customers. As such, there is less than fully effective support for some training customers. There is no funding available for acquiring new systems. The range may be able to leverage JSF training needs to obtain some simulators that could be used by other (non-JSF) training customers as well. Otherwise, customers must bring their own specific emitters/simulators.
	Spacelift	🟡	There is limited infrastructure for Spacelift, and limited site options for Spacelift operations. However, SRI sites have been used for endoatmospheric probe launches, and D-3 was selected as a Space Port Florida site. There is no planned resolution at this time; current facilities have been adequate to date.
Range Support	Spacelift	🟡	There is limited infrastructure for Spacelift, and limited site options for Spacelift operations. However, SRI sites have been used for endoatmospheric probe launches, and D-3 was selected as a Space Port Florida site. There is no planned resolution at this time; current facilities have been adequate to date.
MOUT Facilities	Strategic Attack	🟡	There are no consolidated MOUT facilities for joint training needs. Only a small number of MOUT-like facilities exist across the Range at Test Sites A-15, A-77, and B-76. The range needs a joint, consolidated plan to install a dedicated MOUT facility to meet joint training needs. A small sophisticated MOUT capability is being constructed to specifically support 7SFG(A) training. The 7 SFG(A) has approval to build a mock village near their cantonment, and AFSOC has plans to improve the existing MOUT facilities on the southwest part of the Eglin Range. These improvements will satisfy the majority of joint training needs.
	Counterair	🟡	Same as above.
	Counterland	🟡	Same as above.
	Command and Control	🟡	Same as above.
	Special Operations	🟡	Same as above.
Suite of Ranges	Strategic Attack	🟡	There is no certified joint MOUT facility with adjacent ground maneuver areas available. This results in the inability to perform maneuver and MOUT operations on a joint certified training area, hampering effective joint training operations. A small sophisticated MOUT capability is being constructed to specifically support 7SFG(A) training. This, in conjunction with smaller MOUTs built for AFSOC training operations, will satisfy the majority of joint training needs.
	Counterair	🟡	Same as above.
	Counterland	🟡	Same as above.
	Command and Control	🟡	Same as above.
	Special Operations	🟡	Same as above.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Eglin Test and Training Complex (ETTC) Assessment Details

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Threatened & Endangered Species	Strategic Attack	●	The Endangered Species Act (ESA) listings of Red-Cockaded woodpeckers (RCWs), Okaloosa darters, Flatwoods salamanders, sea turtles, Piping Plover, and the Gulf Sturgeon and their associated habitat over the years has resulted in various restrictions being imposed on Eglin's training capability. These restrictions have reduced the use of some land areas and littoral/riverine areas from using certain land vehicles, conducting various troop movements, employment of certain munitions, and placement of targets for Training mission activities. Eglin's current Integrated Natural Resources Management Plan (INRMP) indicates there are approximately 17,000 acres of the Eglin Land Range that is potential habitat for Flatwoods Salamanders. Based on the INRMP model, approximately 128,000 acres of Eglin is designated RCW foraging habitat, and Piping Plover, Bog Frog, Indigo Snake, and Gopher Tortoise areas and habitat (including High Quality Natural Communities) combine to place many more acres of restrictions/mitigations over much of the Eglin Land Range area (approximately 264,524 acres of the 442,878-acre ETTC Land Range area. The planned action is to continue to work with the Natural Resources Office to develop procedures to enhance training capability while protecting T&E species and their associated habitat improvements/restoration in areas that have the least impact on Training operations/ capabilities. The Eglin Natural Resource Office has long been recognized as a leader in the Department of Defense (DoD) for its proactive approach to management of Eglin's natural resources. Efforts have focused on habitat improvements/restoration that should increase T&E species populations; which should allow greater flexibility for training operations in the future. Balancing judicious protection of training resources/capabilities with protection of threatened and endangered species and their habitats is a continuing management process that requires the support of all range stakeholders.
	Counterair	●	Same as above.
	Counterspace	●	Same as above.
	Counterland	●	As noted above, the existence of red cockaded woodpeckers, Okaloosa darters, Flatwoods salamanders, gopher tortoises, indigo snake, marine mammals, and various sea turtles (the primary local endangered/threatened/ protected species), and designated critical habitat for certain shorebirds on Santa Rosa Island and the gulf sturgeon along shorelines and adjacent rivers/streams restrict the use of some land areas and littoral/riverine areas for the use of some a/c, munitions, and targets; as well as land/water training maneuvers. The planned action is to continue to work with local Natural Resources Office to develop mitigations and procedures to minimize the impact of T&E considerations on Training capabilities. It is not so much that the areas are restricted to use as it is that there are certain terms and conditions that have to be met in order to use these areas. Some of the restrictions/mitigations incur costs to the training unit, some restrict certain types of training activities, and some incur delays during the consultation process.
	Countersea	●	There are limitations on operations due to gulf sturgeon critical habitat along the coast, in Choctawhatchee Bay, and in adjacent rivers; the presence of marine mammals along the coast and in the bays; and a proposal to establish Marine Protected Areas (MPAs) or Monuments in the northern Gulf of Mexico have the potential to significantly impact Eglin's Training mission. These restrict certain operations over the ETTC, including those that were designed/intended for countersea operations. The planned action is to continue to work with regulatory agencies and the Natural Resource Office to develop mitigations and procedures for T&E species that are practical and consistent with the military training mission; and to provide mission impact analysis to decision makers concerning proposed MPAs and other proposed mission restrictions.
	Air Drop	●	Same as Countersea.
	Special Operations	●	Encroachment arises from the Endangered Species Act, Marine Mammal Protection Act, Migratory Bird Treaty Act, National Environmental Policy Act and other regulatory drivers. Limitations on operations due to gulf sturgeon critical habitat along the coast, in the Bay, and in adjacent rivers; certain species of mussels recently listed under the ESA; the presence of marine mammals along the coast and in the bays; and a proposal to establish Marine Protected Areas (MPAs) or Monuments in the northern Gulf of Mexico have the potential to significantly impact Eglin's Training mission. Restrictions due to sea turtle nesting and seasonal shorebird presence on SRI places operational conditions on operations on Santa Rosa Island and on littoral areas, including those that were designed/intended for Special Operations. This places conditional restrictions on operations along the coast and bay areas. The planned action is to provide mission impact analysis to decision-makers concerning future proposals, and to continue to work with Eglin NRO office to develop mitigations and procedures that minimize the impact of protected species considerations on Training capabilities. There are specific terms and conditions that have been negotiated between NRO and the regulators that have to be met in order to use these areas. Some of the terms and conditions incur costs to the training unit (financial, manpower, and time); places operation conditions on certain types of training activities; reduce training realism; and some can incur delays due to the consultation process when needed. The goal is to conduct Training mission activities while protecting our natural resources and reduce costs or extended coordination cycles to the fullest extent possible.

Eglin Test and Training Complex (ETTC) Assessment Details

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Munitions Restrictions	Counterland	●	The terms and conditions of National Environmental Policy Act documents (e.g., Enivornmental Impact Statements, Envrionmental Assessments, etc.), limit the types and quantities of munitions that can be used on the ETTC. These documents typically cover a certain level of munition usage, beyond which additional consultation and planning is required. There are also land-based munitions restrictions relating to wetlands, streams, and protected species buffers.
	Countersea	●	Due to gulf sturgeon critical habitat along the coast, in the Bay, and in adjacent rivers certain training operations requires consultation with regulatory agencies, including those that were designed/intended for countersea operations. Consultations with regulatory agencies can cause delays and incur additional cost to the training mission. The Marine Mammal Protection Act requires consultation for certain munition usage activities in the ETTC and can impose additional costs (manpower and financial) on training missions. The planned action is to continue to work with local Natural Resources Office to conduct needed consultations with regulatory agencies by developing T&E species term and conditions to minimize the impact of munitions restrictions on training capabilities, including investigating new approaches such as the use of recorded danger calls or noises to disperse marine mammals and other sea creatures that might be in the impact area.
	Special Operations	●	Same as above.
Spectrum	Strategic Attack	●	The electromagnetic spectrum needed for Training operations suffers from interference, and the total amount desired is unavailable. There are constraints placed on Training due to unavailability of, or interference with, required electromagnetic spectrum. The FCC plans to auction 500 MHz of federal spectrum over the next ten years, which will cause additional encroachment and EM problems. To help mitigate interference and congestion issues, all frequencies will be scheduled for de-confliction to prevent interference among training users. Eglin has a Frequency Control and Analysis function with both fixed and mobile assets that find conflicting signal sources that need to be shut down. Eglin is also in the process of installing 3 additional fixed passive radio frequency antenna sites which will aid in finding those conflicting signals. Two of these sites are currently planned but unfunded. Eglin has also done extensive upgrades and is continuing to purchase newer radios and equipment that have tighter control of their emissions (narrower bands) and have shifted to less-used frequency bands. The range also actively works on EM shielding and noise attenuation to limit impacts to/from equipment.
	Counterair	●	Same as above.
	Counterspace	●	Same as above.
	Counterland	●	Same as above.
	Countersea	●	Same as above.
	Information Operations	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Command and Control	●	Same as above.
	Air Drop	●	Same as above.
	Special Operations	●	Same as above.
	Intelligence, Surveillance, Reconnaissance	●	Same as above.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Eglin Test and Training Complex (ETTC) Assessment Details

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Maritime Sustainability	Strategic Attack	●	Encroachment from oil drilling operations in the Gulf, restrictions on use of high explosives in Gulf, and increased volume of civilian boating activities in potential danger areas are all limitations to Strategic Attack. Oil drilling operations with above-surface structures reduces the area available to test and train with large footprint weapons over the EGTTR; certain types of high explosive munitions are restricted from use in the EGTTR which restricts the type of training that can be done in the EGTTR; increased civilian boat traffic makes it time-consuming to clear large areas of the EGTTR for large footprint weapons releases. The Range plans to work with EGTTR users to ensure updated Mission Impact Analyses are provided to the DoD Executive Agent (for Outer Continental Shelf (OCS) oil and gas development) of the DoD's use of the Gulf of Mexico. It is imperative that the Military Mission Line and restrictions for surface OCS development be maintained, to enable future training operations in the EGTTR. The Range will continue to work with the local Natural Resource Section to develop mitigations and procedures to minimize the impact of marine mammal considerations on training capabilities in the EGTTR. Range clearance procedures are reviewed frequently and provide the most efficient process for clearing required areas of the EGTTR. An anticipated date for a final solution is unknown.
	Counterair	●	Same as above.
	Counterspace	●	Same as above.
	Counterland	●	Same as above.
	Countersea	●	Same as above.
	Special Operations	●	Encroachment from oil drilling operations in the Gulf, restrictions on use of high explosives in Gulf, and increased volume of civilian boating activities in potential danger areas are all limitations to Strategic Attack. Oil drilling operations with above-surface structures reduces the area available to test and train with large footprint weapons over the ETTC. Certain types of high explosive munitions are restricted from use in the ETTC, which restricts the type of training that can be done. Increased civilian boat traffic makes it time-consuming to clear large areas of the ETTC for large footprint weapons releases. The Range plans to work with ETTC users to ensure updated Mission Impact Analyses are provided to the DoD Executive Agent (for Outer Continental Shelf (OCS) oil and gas development) of the DoD's use of the Gulf of Mexico. It is imperative that the Military Mission Line and restrictions for surface OCS development be maintained, to enable future training operations in the ETTC. The Range will continue to work with the local Natural Resource Section to develop mitigations and procedures to minimize the impact of marine mammal considerations on training capabilities in the ETTC. Range clearance procedures are reviewed frequently and provide the most efficient process for clearing required areas of the ETTC.

Eglin Test and Training Complex (ETTC) Assessment Details

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Airspace	Counterland	●	Increased general aviation traffic in the Part 93 North-South Corridor and placement of the 7SFG(A) cantonment area in the north-central portion of the Eglin Range restrict the capability for cross-range shots, large footprint munitions training, and simultaneous use of east and west range areas for live weapons activity. Some safety profiles have been reengineered to include the new restrictions and some profiles are no longer usable. The Gulf Regional Airspace Strategic Initiative (GRASI) has been developed to address all airspace issues. Recommendations from GRASI need to be implemented to ensure airspace capability and capacity are not restricted. A follow-up to GRASI is the Landscape Initiative which is studying moving non-hazardous training to sites not under Restricted Airspace, including some nearby State and National Forests. Airspace modeling by Virginia Tech indicates without relief of nonhazardous ops from the restricted area, a higher percentage of user missions will not get accomplished. Anticipated implementation date of the Landscape Initiative is FY2015.
	Countersea	●	Increasing pressures for off-shore oil and gas exploration and production, and increased volume of civilian air traffic over mission areas causes reduced surface area and associated airspace, and reduced availability of existing Special Use Airspace (SUA) for Countersea training operations. The Range plans to work with ETTC users to ensure updated Mission Impact Analyses are provided to the DoD Executive Agent (for Outer Continental Shelf (OCS) oil and gas development) of the DoD's use of the Gulf of Mexico. It is imperative that the Military Mission Line and restrictions for surface OCS development be maintained, to enable future training operations in the EGTTR. A follow-up to GRASI is the Landscape Initiative which is studying moving non-hazardous training to sites not under Restricted Airspace, including some nearby State and National Forests. Airspace modeling by Virginia Tech indicates without relief of nonhazardous ops from the restricted area airspace, a higher percentage of user missions will not get accomplished. Anticipated implementation date of the Landscape Initiative is FY2015.
	Special Operations	●	Increasing pressures for off-shore oil and gas exploration and production, increased use of Eglin SUA for JSF training and civilian aviation, and increased volume of civilian air traffic over potential danger areas in the EGTTR causes reduced surface area and associated airspace, and reduced availability of existing SUA for Special Operations training. The Range plans to work with EGTTR users to ensure updated Mission Impact Analyses are provided to the DoD Executive Agent (for Outer Continental Shelf (OCS) oil and gas development) of the DoD's use of the Gulf of Mexico. It is imperative that the Military Mission Line and restrictions for surface OCS development be maintained, to enable future training operations in the EGTTR. A follow-up to GRASI is the Landscape Initiative which is studying moving non-hazardous training to sites not under Restricted Airspace, including some nearby State and National Forests. The anticipated date of the Landscape Initiative is FY2015.
Noise Restrictions	Strategic Attack	●	Residential development can create noise-sensitive areas near low-level routes and airfield approaches. Future JSF training and 7SFG(A) range activities will exacerbate this problem. The proximity of the 7th SFG live-fire ranges to populated areas may cause public noise complaints. A Supplemental EIS is being prepared to evaluate other JSF flight options, including moving the bulk of airfield training activities to Auxiliary Field. Eglin AFBI 11-201 contains mission restrictions that are designed to reduce noise impacts. The Record of Decision based upon the final SEIS is pending. Eglin AFB and Hurlburt Field maintain a log of noise complaints and investigate each to determine the source.
	Counterair	●	Same as above.
	Counterland	●	Low-level routes and overwater approaches to the land range result in occasional noise complaints. This problem will increase when JSF training operations begin. Noise complaints could increase which could cause additional restrictions to be placed on low-level and overwater approaches. The original EIS did not identify this area as a high risk issue, but if noise complaints do become a problem, local officials will develop modified procedures to address it.
	Special Operations	●	SOF accomplishes much of its training during the hours of darkness, frequently employing explosives and aircraft. The noise of these operations impacts the local community during normal rest periods, leading to negative impressions of the military by the affected communities. There is no practical remedy at this time.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Eglin Test and Training Complex (ETTC) Assessment Details

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Adjacent Land Use	Strategic Attack		The Range has limited water-to-land flight corridors for armed weapons systems. This reduces the flexibility of making realistic water-to-land transitions with armed weapons systems or allowing water-to-land transitions by long range standoff weapons. Potential land acquisitions and cooperative efforts with other agencies to obtain overflight privileges are useful in increasing the width of the water-to-land corridors. A "Next Generation" proposal for a remote impact area in a sparsely populated area near the Florida coast is being reviewed for resubmission. This solution would provide a large water-to-land corridor that would enable the overwater launch and subsequent land impact of almost any long range standoff weapon in development or in the inventory. An anticipated date for resolution is unknown since review is still in an informal phase.
	Counterair		Same as above.
	Counterland		Urban sprawl, land use conversion from agriculture to residential, and new transportation corridors (on and off Eglin) all restrict training. Development around the Range leads to a host of secondary encroachment concerns including tall structures, more EM-emitting devices, additional noise-sensitive receptors, pressure on protected species, etc. The push for use of more renewable energy sources has resulted in a solar farm proposal near the eastern boundary of the land range, and there is increased use of small wind energy systems in the areas surrounding Eglin. This can restrict future military operations on periphery of the Eglin Range, and interfere with flight operations and data transmission from test and training missions. Buffering the adjacent land from urban development yields many long-term encroachment benefits. Eglin has developed Readiness and Environmental Protection Integration (REPI) projects to acquire property rights on adjoining private property, including a multi-million dollar effort to preserve the Nokuse Plantation (a REPI Challenge-winning project). Eglin has worked with the surrounding community to address land use concerns through the Joint Land Use Study, AICUZ, Small Area Studies, ICEMAP, and through continual coordination at the municipal planning level. The surrounding cities and counties frequently work with Eglin on issues of concern, and have changed their Comprehensive Plans, Land Development Codes, and other relevant Ordinances to encourage military compatibility. A well-structured Range Planning Process is in place where Mission Impact Analyses are performed on proposals brought forward by the cities/counties.
	Countersea		Same as above.
Cultural Resources	Strategic Attack		Restrictions on the training mission arise from the NHPA, ARPA, NAGPRA, and other regulations, as well as local agreements made in consultation with the Florida SHPO. The Integrated Cultural Resources Management Plan (ICRMP) indicates that approximately 205,336 acres within the Eglin installation are identified as high probability for containing cultural resources and recommended for archaeological survey. These "high probability" areas (determined by a computer model) have restrictions on their training use until they are surveyed. Planned actions include continuing to develop Mission Impact Analyses that consider the mission impact of proposed cultural resource restrictions, along with rewriting the local supplement to AFI 13-212 to better definition the roles of the Range Operating Authority in the role of reviewing, coordinating, and approving these new restrictions before they are provided to outside coordination agencies and levied on Training units. The Civil Engineering Group has developed an environmental restriction tool which is available for use by Test Wing planners to aid customers with their mission needs while complying with existing cultural resources restrictions.
	Counterair		Same as above.
	Counterland		There are known and suspected cultural resource sites along the coast, in the interior of the Eglin Range, and along rivers and streams. These are encroachments that impede the use of the Range by training units, and add costs and time to the planning side. Littoral and riverine, ingress/egress training operations are restricted to several small and somewhat uncharacteristic areas along the coasts and streams. The Range Operating Authority (ROA) must continue to develop Mission Impact Analyses that consider the serious mission impact of some of these new restrictions. Planned efforts include rewriting the local supplement to AFI 13-212 to better define the roles of the ROA in the reviewing, coordinating, and approving of these new restrictions before they are provided to outside agencies (e.g., the SHPO, etc.) for coordination, and before they are levied on Training units. The proponent must work with the Cultural Resources office during AF Form 813 review to identify available training sites and to determine what restrictions apply to the proponent's preferred sites. The Civil Engineering Group has developed an environmental restriction tool which is available for use by Test Wing planners to aid customers with their mission needs while complying with existing cultural resources restrictions.
	Countersea		Same as above.
	Air Drop		Same as above.
	Special Operations		Same as above.

Eglin Test and Training Complex (ETTC) Assessment Details

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Wetlands	Counterland	●	There are land use restrictions in and around wetlands. Wetland restrictions affect munitions usage, target placement, and digging, and vehicle usage. The Eglin INRMP states that 65,350 acres of the Land Range are considered wetlands. The buffers maintained around these wetlands further adds to the acreage (approximately 87,736 acres total) that is encumbered by wetland encroachment. Eglin also follows State of Florida regulations on the use/management of wetlands, adding another layer of regulatory burden. In addition, Significant Botanical Sites (SBSs), as well as larger-scale landscapes containing complexes of High Quality Natural Communities and rare species are singled-out for special restrictions. Combined, these High Quality Natural Communities and SBSs total 111,314 acres. Therefore, wetlands, High Quality Natural Communities, and Significant Botanical Sites constrict activities on approximately 200,000 acres of the 443,000-acre Eglin Land Range (almost half the available land Range surface). The proponent must work with the Natural Resources Section during AF Form 813 review to identify available Training sites and to determine what restrictions apply to the proponent's preferred sites. An environmental restriction tool has been created by 96 Civil Engineering Group and is available to Test Wing planners to aid them in meeting their training mission needs while complying with Eglin's natural and cultural resource restrictions.
	Air Drop	●	Same as above.
	Special Operations	●	Same as above.
	Intelligence, Surveillance, Reconnaissance	●	Same as above.
Range Transients	Countersea	●	Eglin controls airspace above the Gulf of Mexico, but does not control the surface of the water. This lack of control causes safety issues and requires additional money and time to work around this situation by hiring civilian boats to warn non-participating parties and ask them to stay out of the hazard area. The Coast Guard - Destin Station also provides assistance with clearing hazard areas in the Gulf. Eglin sometimes uses an E-9A aircraft to ensure the hazard area is clear of non-participating parties, though there have been issues with cost and aircraft availability. The overwater ranges also have issues with civilian aircraft periodically infringing on this airspace and causing negative effects on mission activities.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Falcon Assessment Details

Range Mission Description

Falcon Range supports air-to-ground sorties (strategic attack, counterland, counterair) and electronic combat training, as well as fires separation and airspace control. It is the primary training range (PTR) for the 301st Fighter Wing, Air Force Reserve Command. Secondary users include A-10, AC-130, B-1, B-2, B-52, F-16 and F/A-18 aircraft from the Air Force, Marine Corps Reserve and Air National Guard. The range also provides training to the USAF AT-38 Introduction to Fighter Fundamentals (IFF) course at Sheppard AFB, TX, as well as active duty, Air National Guard, and allied joint terminal attack controller (JTAC) initial and continuation training. In addition, the range supports the Joint Fires Observer (JFO) training course at Fort Sill, which trains U.S. and allied JFOs to augment JTAC missions. The range provides laser testing and scoring for MC-12W aircraft, and supports threat reaction, weapons employment and laser operations for USAF C-130 and C-17 aircraft, and U.S. Army, Marine Corps and allied rotary wing aircraft. The range also supports unmanned aircraft surveillance training, laser employment and weapons deliveries.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strategic Attack	PMC	FMC			FMC	PMC	FMC	FMC	FMC			FMC	FMC
Counterair	FMC	FMC			FMC	PMC	FMC	FMC	FMC			FMC	FMC
Counterspace													
Counterland	PMC	FMC			FMC	PMC	FMC	FMC	FMC			FMC	FMC
Countersea													
Information Operations													
Electronic Combat Support	FMC	FMC			FMC	PMC	FMC	FMC	FMC			FMC	FMC
Command and Control	FMC	FMC			FMC	FMC	FMC	FMC	FMC			FMC	FMC
Air Drop	PMC	FMC			FMC	FMC	FMC	FMC	FMC			FMC	FMC
Air Refueling													
Spacelift													
Special Operations	FMC	FMC			FMC	FMC	FMC	FMC	FMC			FMC	FMC
Intelligence, Surveillance, and Reconnaissance	FMC	FMC			FMC	FMC	FMC	FMC	FMC			FMC	FMC

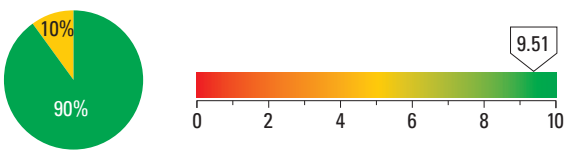
Legend: FMC, PMC, NMC

Encroachment Data

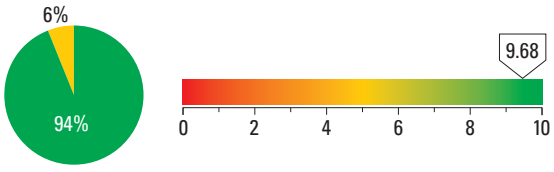
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strategic Attack	Minimal	Moderate	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal		Minimal
Counterair	Minimal	Moderate	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal		Minimal
Counterspace												
Counterland	Minimal	Moderate	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal		Minimal
Countersea												
Information Operations												
Electronic Combat Support	Minimal		Moderate		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal		Minimal
Command and Control	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal		Minimal
Air Drop	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal		Minimal
Air Refueling												
Spacelift												
Special Operations	Minimal	Moderate	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal		Minimal
Intelligence, Surveillance, and Reconnaissance	Minimal		Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal		Minimal

Legend: Minimal, Moderate, Severe

Capability Chart and Scores



Encroachment Chart and Scores



Falcon Assessment Details

Summary Observations
The range has improved its infrastructure since 2004 with multiple scoring systems. Falcon Range provides aircrews with two urban areas, one which is laser-scoring capable, and one which is supports both lasers and kinetic weapon employment. Three electronic warfare threat simulators are available; however, they are not transponder or skin-paint tracking systems, but visual-only or fixed-site emitters, with no real feedback mechanism, so they offer limited capability. Realistic self-consuming MANPAD simulators provide additional threat reaction training while making a very minimal impact on the environment. The MANPAD simulators do not require EOD support and leave no residue. The range has on-site EOD support, so the range is not closed for extended periods for EOD cleanup. Targets are realistic and range from large buildings to small anti-aircraft guns and mannequins. Several unmanned moving targets, which can follow either a pre-programmed route or can be manually controlled as the scenario dictates, allow the full-scale delivery of weapons against a moving target, as well as combat laser employment. There are three laser scoring systems, one of which will upgrade in July 2014, one laser designation system, and two kinetic scoring systems available. The primary constraint to the range is the size of the impact area. It limits the employment of some laser-guided and most inertially-aided munitions due to WDZ restrictions. The Army prohibits the intrusion of any WDZ outside the range areas with a containment or risk of greater than 1:1,000,000. Several doctrinally-accepted weapons deliveries are restricted due to WDZs extending outside the range. Strategic Attack is most affected by the range's size; however, there are very few strategic attack missions (less than 2% of annual sorties). The range also works extensively with Fort Sill environmental agencies and has helped reclaim old dump areas to their original state.

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Capability Scores	6.88	6.88	10.00	9.79	9.79

Falcon Range has excellent capabilities for a range of its size, although future employment has some limitations. These limitations are not unique to Falcon Range; as inertially-aided weapons are developed and fielded their WDZs for some weapons parameters prove to be larger than the range boundaries. The range is limited to 1:1,000,000 risk values to manned sites by Army Regulation 385-63. Pending airspace upgrades will allow the range to better serve customers with improved airspace for maneuver and laser employment. The range has excellent laser scoring and designation capability, and all personnel are highly trained in laser operations. The addition of multiple moving targets allow aircrews to actively fire lasers at a moving target and deliver munitions against a moving target array, a capability not found at most other ranges. This capability becomes more critical as weapons such as the laser JDAM are developed, and as lead-computing impact point software is employed. The 301st Fighter Wing and the MAJCOM are seeking an upgraded radar threat emitter which will offer significant improvement over the current suite of visually-tracked emitters.

Summary Observations
The range is part of the Fort Sill range complex. Encroachment is minimal, although there are a number of nearby wind farms that, if expanded, may eventually encroach upon low-level airspace leading into the range. The Army is currently involved in the purchase of adjoining land in order to provide a larger buffer zone, and a larger restricted airspace becomes effective at the end of 2014. There are no environmental or cultural shortfalls at the range. External frequency encroachment is minimal, although there are restrictions placed on the employment of electronic countermeasures, both hard (chaff) and soft (jamming) due to nearby radars. Weapons/ordnance deliveries are restricted due to the Army's requirement to ensure weapons containment, and the lack of available landspace on one border caused by the adjoining National Wildlife Refuge.

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Encroachment Scores	9.77	9.77	10.00	10.00	10.00

There are no historical issues at Falcon Range for encroachment. The range has not been adversely affected by encroachment; in fact, the range has benefitted in some events from the upgrades at Fort Sill as a result of BRAC 2005. Cultural sites on the range are well clear of any target areas and are set aside from the target arrays in order to preserve their integrity; Fort Sill has an active trust program. The existence of the Wichita Mountains Wildlife Refuge to the north and Fort Sill to the east precludes development nearby, although there is a corresponding constraint to some weapons deliveries. The nearest wind farms are 17 miles northeast and are outside of low-altitude airspace. Spectrum issues remain significant, due to nearby civilian and military radar sites, although the actual impact on training is small. It is not likely that the spectrum restrictions will be lifted in the near future. As the WDZ Tool continues to improve as a result of improved weapons data, restrictions placed on the use of initially-aided munitions may lessen in the future. Currently there are some weapons/parameters combinations that cannot be performed due to the Army's requirement to contain weapons with better than 1:1,000,000 risk values. The actual impact on the ability to employ inertially-aided munitions is minimal because their employment can be easily simulated. Recent airspace initiatives (R-5601G and H) will become effective in 2014 with an increase in airspace available for the employment of lasers and maneuver of aircraft. Additionally, the deactivation of a FORSCOM artillery battalion at Fort Sill will result in more opportunities to utilize airspace normally allotted for artillery.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Falcon Limitation Details

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strategic Attack	●	Landspace is limited, so the range does not have the capability to support all munitions and weapons delivery parameters. Training requires some constraints and attack axis restrictions, but is not adversely affected. No planned action, although recent (2013) agreements with the host service have allowed realistic weapons attacks.
	Counterland	●	Same as above.
	Air Drop	●	Landspace is limited, so the range does not have the capability to support air drops throughout the entire range complex. Air drop training requires planning and adherence to restrictions, but is not adversely affected. No planned action, the adjacent host base allows unconstrained realistic air drops.
Threats	Strategic Attack	●	Limited threat replication capability. No coupled radar threat systems or transponder tracking systems, only optically guided short-range threat systems. Visual threat systems are realistic and offer good capability. Aircrews receive limited feedback regarding their threat avoidance and countermeasures. Aircrews do receive triggers to initiate countermeasures and maneuvers. Request for advanced threat systems has been made by wing leadership and by the MAJCOM.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Munitions Restrictions	Strategic Attack	●	Limits placed on the WDZs by Army Regulation (AR) 385-63 restrict the WDZ risks. Selected weapons (laser-guided and inertially-aided munitions) require restricted release parameters, which do not always emulate in-theater employment options. No planned action, range resides within Army property and must adhere to the restrictions placed on it by the host Service regulations. Since 2013, the range allows significantly more restricted weapons employment due to updated and improved WDZ Tool parameters.
	Counterair	●	Limits placed on the WDZs by AR 385-63 restrict the WDZ risks. Selected weapons (laser-guided and inertially-aided munitions) require restricted release parameters, which do not always emulate in-theater employment options. Actual anti-radiation missiles cannot be employed within the airspace boundaries, but passive search and simulated employment is permitted throughout the airspace. No planned action, the range resides within Army property and must adhere to the restrictions placed on it by the host service regulations. Since 2013, the range allows significantly more restricted weapons employment due to updated and improved WDZ Tool parameters.
	Counterland	●	Limits placed on the WDZs by AR 385-63 restrict the WDZ risks. Selected weapons (laser-guided and inertially -aided munitions) require restricted release parameters, which do not always emulate in-theater employment options. Actual air-to-surface missile employment is not authorized due to the large WDZs that extend beyond the range boundaries, but simulated attacks are authorized throughout the range. No planned action, range resides within Army property and must adhere to the restrictions placed on it by the host service regulations. Since 2013, the range allows significantly more restricted weapons employment due to updated and improved WDZ Tool parameters.
	Special Operations	●	Limits placed on the WDZs by AR 385-63 restrict the WDZ risks. Selected weapons such as remotely-piloted aircraft inertially-aided munitions require restricted release parameters, which do not always emulate in-theater employment options. No planned action, range resides within Army property and must adhere to the restrictions placed on it by the host service regulations. Since 2013, the range allows significantly more restricted weapons employment due to updated and improved WDZ Tool parameters.
Spectrum	Electronic Combat Support	●	Employment of combat chaff and radar jamming techniques not allowed due to the close proximity of the range to FAA, Army and Air Force radars. No significant effect on training, simulation performs the same role as actual employment, i.e. training aircrews to employ countermeasures as needed. No planned action.

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Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Grand Bay Assessment Details

Range Mission Description

Grand Bay supports AF core functions of Global Precision Attack, Personnel Recovery, Special Operations. Primary mission is 23 WG COCOM combat readiness, secondary missions are to support A-10 RAP training (CAS, forward air control and interdiction) and Personnel Recovery training (CSAR). The range has Basic Surface Attack targets and tactics capabilities and can support basic Electronic Warfare (EW) training with Radar Warning Receiver Low Cost Threat Emitter (RWR LTE).

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strategic Attack		FMC				FMC							
Counterair	FMC	FMC			FMC	FMC		FMC	FMC		FMC	FMC	PMC
Counterspace													
Counterland	FMC	PMC			FMC	FMC		FMC	FMC	FMC	FMC	FMC	PMC
Countersea													
Information Operations	FMC	FMC			FMC				FMC	FMC	FMC	FMC	
Electronic Combat Support	FMC	FMC			FMC	FMC		FMC	FMC		FMC	FMC	
Command and Control	FMC	FMC			FMC				FMC	FMC	FMC	FMC	
Air Drop	FMC	FMC			FMC	FMC		FMC	FMC		FMC	FMC	FMC
Air Refueling	FMC	FMC				FMC		FMC	FMC				
Spacelift													
Special Operations	FMC	PMC			FMC	FMC		FMC	FMC				
Intelligence, Surveillance, and Reconnaissance	FMC	FMC			FMC	FMC		FMC	FMC		FMC		

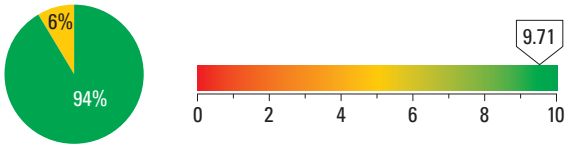
Legend: FMC, PMC, NMC

Encroachment Data

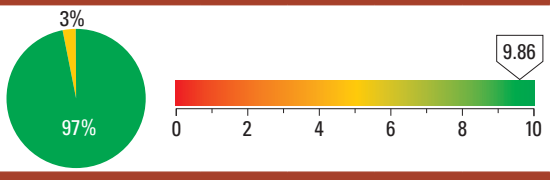
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strategic Attack												
Counterair	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal			
Counterspace												
Counterland	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Moderate	Minimal		Moderate	
Countersea												
Information Operations	Minimal		Minimal		Minimal	Minimal	Minimal	Minimal	Minimal			
Electronic Combat Support	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal			
Command and Control	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal			
Air Drop	Minimal		Minimal		Minimal	Minimal	Minimal	Minimal	Minimal		Minimal	
Air Refueling	Minimal		Minimal		Minimal	Minimal	Minimal					
Spacelift												
Special Operations	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal				Minimal	
Intelligence, Surveillance, and Reconnaissance	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal		Minimal	

Legend: Minimal, Moderate, Severe

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

A major area of concern involves the increase in the area identified as being in flood plains and the lack of ability to expand WDZs over some wetland area due to concerns about munitions constituents. This restricts the ability to create new target areas and expand the air to ground munitions expenditure utility of Grand Bay Range. Another area of concern is the need to restructure existing airspace and also the proposal to acquire additional, low altitude airspace to support training of Moody AFB assigned units.

Summary Observations

The main area of concern is the lack of ground space to support training associated with the 23 WG and the 93 AGOW. In most cases there is an "either/or" approach to scheduling in order to prevent or manage safety and conflict concerns.

Grand Bay Assessment Details

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Capability Scores	9.58	9.58	9.68	9.91	9.91
There are no major changes in capabilities or encroachment issues at Grand Bay Range. The small incremental encroachment assessment changes are due to in-house re-assessment due to additional training missions being performed on the range, existing range use and scheduling adaptations, or other small adjustments made in an effort to use Grand Bay Range more efficiently or expand its training utility. Long term projections will depend on the future of airframes based at Moody AFB. At this time, the range anticipates that CSAR training requirements will not drastically change even after the beddown of the HC-130J. The CRH (HH-60 replacement) program in in its infancy and future training requirements have yet to be defined. The largest change on future projections could result from future plans for the A-10 platform and USAF leadership decisions regarding follow-on aircraft basing. Grand Bay Range is posturing to support small arms weapons firing events for Moody AFB assigned PJ and Security Force personnel. Developing a proposal to acquire more land, however, would increase the ability to support simultaneous training on range.					

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Encroachment Scores	9.49	9.49	9.85	9.92	9.92
There are no major changes in capabilities or encroachment issues at Grand Bay Range. The small incremental encroachment assessment changes are due to in-house re-assessment due to additional training missions being performed on the range, existing range use and scheduling adaptations, or other small adjustments made in an effort to use Grand Bay Range more efficiently or expand its training utility. Long term projections will depend on the future of airframes based at Moody AFB. At this time, the range anticipates that CSAR training requirements will not drastically change even after the beddown of the HC-130J. The CRH (HH-60 replacement) program in in its infancy and future training requirements have yet to be defined. The largest change on future projections could result from future plans for the A-10 platform and USAF leadership decisions regarding follow-on aircraft basing. Grand Bay Range is posturing to support small arms weapons firing events for Moody AFB assigned PJ and Security Force personnel. Developing a proposal to acquire more land, however, would increase the ability to support simultaneous training on range.					

Grand Bay Limitation Details

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Airspace	Counterland	●	23 WG units training at Moody AFN would benefit from additional low altitude airspace and/or a lower altitude floor in some of the existing airspace. Moody currently only has one training area that allows air operations down to 100 feet AGL. The operational mission of all units assigned to Moody require lower airspace as part mission readiness requirements. The single training area (MOA 2 South) creates congestion, scheduling conflicts, and non-availability issues which affects Moody AFB and JTAC readiness. The 23 WG has submitted an airspace restructure and acquisition proposal to Air Combat Command for review.
	Special Operations	●	Same as above.
Suite of Ranges	Counterair	●	Counterair training events are not a major part of the support offered by Grand Bay Range. If a large amount of land area is required in conjunction with counterair training events, Grand Bay is limited in that respect. No actions are planned, other than to acquire plots of land underneath Moody MOAs to better meet training requirements in this area.
	Counterland	●	Grand Bay Range does not have enough property to allow a large degree of simultaneous air to ground and ground personnel training or large scale force-vs-force activities. This limits simultaneous utility of the range for readiness training events. Deconfliction is managed through single use of the range for a number of events. The 23 WG is considering proposing the acquisition of additional land to better support simultaneous use of the range.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Adjacent Land Use	Counterland	●	Grand Bay Range does not have enough property to allow a large degree of simultaneous air to ground and ground personnel training events. The limits simultaneous utility of the range for readiness training events. Deconfliction is managed through single use of the range for a number of events. The 23 WG is considering proposing the acquisition of additional land to better support simultaneous use of the range.
Wetlands	Counterland	●	There is a large amount of wetlands located on Grand Bay Range, which limits the land useable for ground training. There are no remedies at this time.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Grayling Assessment Details

Range Mission Description

Grayling Range supports ANG flying the of A10 unit 107th FS at Selfridge ANGB MI, F-16 at Toledo ANGB OH, A-10 at Fort Wayne ANGB IN, and all units deployed in training at Alpena CRTC. The range also supports ground force training of JTACs, security forces, and joint exercises.

Capability Data

Mission Areas	Capability Attributes												
	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
Strategic Attack	●	●			●	●	●	●	●		●	●	●
Counterair	●	●			●	●	●	●	●		●		●
Counterspace													
Counterland	●	●			●	●	●	●	●	●	●	●	●
Countersea													
Information Operations	●	●			●	●	●	●	●				●
Electronic Combat Support	●	●			●	●	●	●	●				●
Command and Control	●	●			●	●	●	●	●				●
Air Drop	●	●			●	●	●	●	●				●
Air Refueling	●	●			●	●	●	●	●				●
Spacelift													
Special Operations	●	●			●	●	●	●	●	●	●	●	●
Intelligence, Surveillance, and Reconnaissance	●	●			●	●	●	●	●			●	●

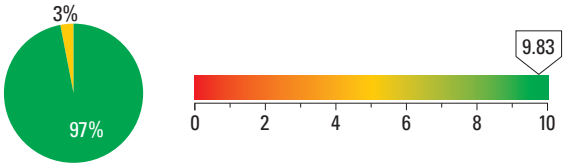
Legend: FMC ● PMC ● NMC ●

Encroachment Data

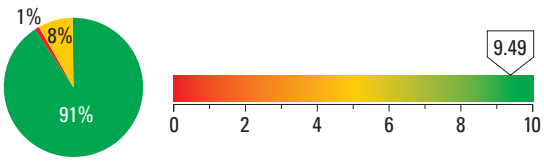
Mission Areas	Encroachment Factors												
	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Strategic Attack	●	●	●		●	●	●	●	●	●	●	●
Counterair	●	●	●		●	●	●	●	●	●	●	●
Counterspace												
Counterland	●	●	●		●	●	●	●	●	●	●	●
Countersea												
Information Operations												
Electronic Combat Support	●	●	●		●	●	●	●	●	●	●	●
Command and Control	●	●	●		●	●	●	●	●	●	●	●
Air Drop	●	●	●		●	●	●	●	●	●	●	●
Air Refueling	●	●	●		●	●	●	●	●	●	●	●
Spacelift												
Special Operations	●	●	●		●	●	●	●	●	●	●	●
Intelligence, Surveillance, and Reconnaissance	●	●	●		●	●	●	●	●	●	●	●

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

No comments.

Summary Observations

No comments.

Historical Information, Results, and Future Projections

Calendar Year	2008	2009	2010	2011	2012
Capability Scores	9.39	9.39	9.44	9.44	9.44

ANG has implemented a capabilities sharing program for threat emitters by mobilizing its emitter capabilities for scheduled exercises and training rotations. Grayling hosts the JTE threat emitters. ANG Force Structure is projected to be relatively stable throughout the FYDP.

Historical Information, Results, and Future Projections

Calendar Year	2008	2009	2010	2011	2012
Encroachment Scores	9.49	9.49	9.49	9.49	9.49

No comments.

Grayling Limitation Details

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Airspace	Counterland	🟡	The airspace size limits flexibility for counterland operations.
	Electronic Combat Support	🟡	Airspace is limited by lateral and vertical constraints. Airspace is adequate to accomplish most of the training required, but restricts a small portion of the training required.
	Special Operations	🟡	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Airspace	Strategic Attack	🟡	Airspace is limited in size based on older aircraft and their capabilities. The Air Force is working an airspace review to re-work the airspace to meet the needs of current and future aircraft.
	Counterair	🟡	Same as above.
	Counterland	🔴	Airspace is limited in size based on older aircraft and their capabilities. Airspace restrictions severely impact and limit realistic training, employment of standoff and guided weapons, and large-force scenarios. The Air Force is working an airspace review to re-work the airspace to meet the needs of current and future aircraft.
	Electronic Combat Support	🟡	Same as Strategic Attack.
	Special Operations	🟡	Same as Strategic Attack.
	Intelligence, Surveillance and Reconnaissance	🟡	There is an increased need for restricted airspace for UAS training.
Noise Restrictions	Strategic Attack	🟡	Mission types have driven the type of training needed to more populated areas and weapon employment parameters have increased (e.g., LGB, Urban CAS) to push aircraft to the edge of restricted airspace. Although areas surrounding the range were built up in the 1970s and 1980s (well after the range site was established in 1948), training requirements have led to many residents filing habitual noise complaints and engaging local and state politicians.
	Counterland	🟡	Same as above.
	Special Operations	🟡	Mission types have created the need for larger patterns around the impact area. CAS wheels, POD usage, and LGB employment create larger noise issues with encroaching Summer residents.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Hardwood Assessment Details

Range Mission Description

Hardwood Range supports ANG and DoD aircrew and JTAC training. The range has a 2x6 mile impact area that allows a variety of munition deliveries in realistic tactical scenarios to include PGMs. The range has 5 UMTE treat emitters. Main users are 115th FW, 132nd FW, 148th FW, 114th FW, 28th BW. 934th AW, and 147th AVN. Hardwood Range is a primary training range for 6 CTS and CAF JTACs. Hardwood is also often used for major exercises at Volk Field such as NATO JTAC training (NATO Rover 2010).

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strategic Attack	●	●			●	●	●	●	●		●	●	●
Counterair	●	●			●	●	●	●	●		●		●
Counterspace													
Counterland	●	●			●	●	●	●	●	●	●	●	●
Countersea													
Information Operations	●	●			●	●	●	●	●			●	●
Electronic Combat Support	●	●			●	●	●	●	●			●	●
Command and Control	●	●			●	●	●	●	●		●	●	●
Air Drop	●	●			●	●	●	●	●		●	●	●
Air Refueling	●	●			●	●	●	●	●				●
Spacelift													
Special Operations	●	●			●	●	●	●	●	●	●	●	●
Intelligence, Surveillance, and Reconnaissance													

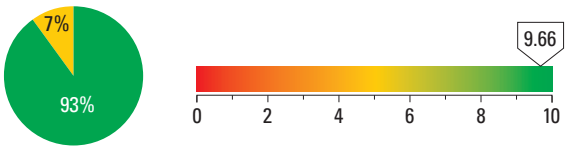
Legend: FMC ● PMC ● NMC ●

Encroachment Data

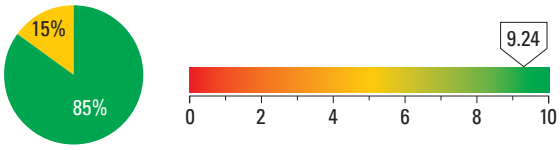
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strategic Attack	●	●	●		●	●	●	●	●	●	●	●
Counterair	●	●	●		●	●	●	●	●	●	●	●
Counterspace												
Counterland	●	●	●		●	●	●	●	●	●	●	●
Countersea												
Information Operations												
Electronic Combat Support	●	●	●		●	●	●	●	●	●	●	●
Command and Control	●	●	●		●	●	●	●	●	●	●	●
Air Drop	●	●	●		●	●	●	●	●	●	●	●
Air Refueling	●	●	●		●	●	●	●	●	●	●	●
Spacelift												
Special Operations	●	●	●		●	●	●	●	●	●	●	●
Intelligence, Surveillance, and Reconnaissance	●	●	●		●	●	●	●	●	●	●	●

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

No comments.

Summary Observations

No comments.

Hardwood Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	9.17	9.17	9.50	9.53	9.53	**Encroachment Scores**	8.99	8.99	9.09	9.24	9.24
ANG has implemented a capabilities sharing program for threat emitters by mobilizing its emitter capabilities for scheduled exercises and training rotations. Volk Field / Hardwood Range host the UMTE and TTRG systems. ANG Force Structure is projected to be relatively stable throughout the FYDP. Volk Field/ WICRTC/ Hardwood Range has taken an aggressive approach to future sustainment and viability by constantly working on the training needs of future missions and public outreach through efforts, such as JLUS. Efforts at Hardwood are improving training and the range overall.						No comments.					

Hardwood Limitation Details

Capability Attributes

Attributes	Assigned Training Mission	Score	Comments
Airspace	Strategic Attack	●	Airspace is limited by lateral and vertical constraints. The airspace is adequate to accomplish most, but not all, of the training required. Supersonic flight is not authorized. The range is currently working an airspace review to re-work the airspace to meet the needs of current and future aircraft.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
Range Support	Strategic Attack	●	Hardwood Range is one of the least manned ranges throughout the NGB. Current mission types and requirements for fire support, etc. has placed a need for creative scheduling. Range manning is based on one shift. Current training requires approximately 40% of activities to be at night, which has driven the range to cover more time with fewer bodies.
	Counterland	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Spectrum	Strategic Attack	●	The range's location between two busy civilian airports means severe restrictions are placed on chaff and electronic countermeasure use. Frequencies are tougher to get, based on everything moving to data links and civilian population becoming more electronic centric.
	Counterair	●	Same as above.
	Electronic Combat Support	●	Same as above.
Airspace	Strategic Attack	●	Airspace is limited in size based on older aircraft and their capabilities. Airspace expansion is difficult due to the range's location between two large civilian airports and their associated arrival and departure routes. The range is currently working an airspace review to re-work the airspace to meet the needs of current and future aircraft.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
Wetlands	Strategic Attack	●	The range is located in an area of large quantities of wetlands. Wetland restrictions have restricted the range's ability to construct complete firebreaks and place new targets. The range is working with the natural resource advisory team on these issues. New target development is planned around wetlands on the range.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Special Operations	●	Same as above.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Hardwood Limitation Details

Encroachment Observations

Attributes	Assigned Training Mission	Score	Comments
Range Transients	Strategic Attack	●	The range boundaries are open, but marked appropriately for the activities taking place. Based on more ATV type vehicles, this increases the number of transients across the range. An effort to fence the entire range is underway. The range continually advises the public of the activities taking place through ATV clubs and other relevant outlets. Public awareness is critical. Hardwood Range has land use policies in place and active perimeter checks are done to ensure public safety.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Special Operations	●	Same as above.

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Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Holloman Assessment Details

Range Mission Description

Holloman Ranges consist of Red Rio Range, Centennial Range and Oscura Range. These ranges are the primary training ranges for the 49th Wing. Ranges support daily air to ground sorties for MQ1, MQ9 and GAF aircraft. These ranges also support training for F-16s, HH60s, and JTAC personnel and an assortment of other USAF, Marine, and Army aircraft.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strategic Attack	PMC	PMC			FMC		FMC	PMC	FMC		FMC	FMC	FMC
Counterair	FMC	PMC			FMC		FMC	FMC	FMC		FMC	FMC	FMC
Counterspace													
Counterland	PMC	PMC			FMC		FMC	PMC	FMC	FMC	FMC	FMC	FMC
Countersea													
Information Operations													
Electronic Combat Support													
Command and Control	FMC	PMC			FMC		FMC	FMC	FMC		FMC	FMC	FMC
Air Drop													
Air Refueling	FMC	PMC			FMC		FMC	FMC	FMC		FMC	FMC	FMC
Spacelift													
Special Operations	PMC	PMC			FMC		FMC	FMC	FMC	FMC	FMC	FMC	FMC
Intelligence, Surveillance, and Reconnaissance	FMC	PMC			FMC		FMC	FMC	FMC		FMC	FMC	FMC

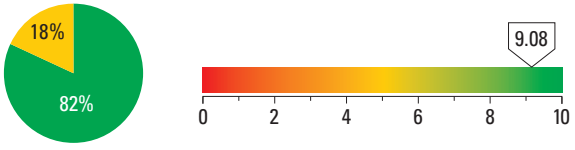
Legend: FMC PMC NMC

Encroachment Data

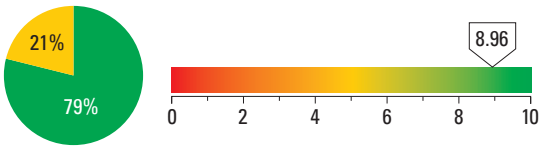
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strategic Attack	Minimal	Moderate	Moderate		Moderate	Minimal	Minimal	Moderate	Minimal	Minimal	Minimal	Minimal
Counterair	Minimal	Minimal	Minimal		Moderate	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Counterspace												
Counterland	Minimal	Moderate	Moderate		Moderate	Minimal	Minimal	Moderate	Minimal	Minimal	Minimal	Minimal
Countersea												
Information Operations												
Electronic Combat Support												
Command and Control	Minimal	Minimal	Minimal		Moderate	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Air Drop												
Air Refueling	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Spacelift												
Special Operations	Minimal	Moderate	Moderate		Moderate	Minimal	Minimal	Moderate	Minimal	Minimal	Minimal	Minimal
Intelligence, Surveillance, and Reconnaissance	Minimal	Minimal	Moderate		Moderate	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal

Legend: Minimal Moderate Severe

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

Air Force training is a low priority for Army airspace (Ft Bliss/WSMR), training has limited access to required airspace, daily coordination/deconfliction with scheduling agencies and constant scheduling fluctuation.

Summary Observations

Recent efforts by Sun Zia and other alternative energy producing companies to construct wind turbines and above ground high-power transmission lines near all three ranges will, if successful, increase the number of low level hazards to low level MTRs feeding the ranges and perhaps affect weapons delivery patterns/ safety boundaries on range.

Holloman Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	8.04	8.04	9.41	9.41	9.41	**Encroachment Scores**	8.42	8.42	10.00	9.88	9.88
WSMR/Holloman deconfliction process continues to improve. Training requirements for both Holloman and Ft Bliss have increased significantly, taxing shared resources (airspace and ranges). Continued close coordinating between agencies attempts to minimize impact.						White Sands Missile Range (WSMR)/Holloman deconfliction process continues to improve. Training requirements for both Holloman and Ft Bliss have increased significantly, taxing shared resources (airspace and ranges). Continued close coordination between agencies is needed to minimize impact.					

Holloman Limitation Details

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strategic Attack	●	The AGM-114 footprint exceeds range boundaries. As a result, UAS cannot train with the AGM-114. This partially mitigated through use of the M-36 Captive Flight Trainer.
	Counterland	●	Same as above.
	Special Operations	●	Same as above.
Aispace	Strategic Attack	●	Air Force training is a low priority for Army airspace (Ft Bliss/WSMR). Training has limited access to needed airspace, and daily coordination/deconfliction with scheduling agencies is needed.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Command and Control	●	Same as above.
	Air Refueling	●	Same as above.
	Special Operations	●	Same as above.
	Intelligence, Surveillance, and Reconnaissance	●	Same as above.
Infrastructure	Strategic Attack	●	There is no electrical power on Red Rio or Centennial ranges. Access is by gravel roads only, which significantly increases wear and tear on vehicles. Wind and solar power partially mitigates the electrical issue. There is no feasible solution for the gravel roads due to budget constraints.
	Counterland	●	Same as above.

Encroachment Factors

Factors	Assigned Training Mission	Score	Comment
Munitions Restrictions	Strategic Attack	●	The AGM-114 footprint exceeds range boundaries. As a result, UAS cannot train with the AGM-114. This partially mitigated through use of the M-36 Captive Flight Trainer.
	Counterland	●	Same as above.
	Special Operations	●	Same as above.
Spectrum	Strategic Attack	●	UASs cannot conduct syllabus training during GPS jamming periods. Daily coordination with testing units reduces impact to training, but there is no fix at this time.
	Counterland	●	Same as above.
	Special Operations	●	Same as above.
	Intelligence, Surveillance, and Reconnaissance	●	Same as above.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Holloman Limitation Details

Encroachment Factors

Attributes	Assigned Training Mission	Score	Comments
Airspace	Strategic Attack	🟡	Air Force training is a low priority for Army airspace (Ft Bliss/WSMR). Training has limited access to needed airspace, and daily coordination/deconfliction with scheduling agencies is needed.
	Counterair	🟡	Same as above.
	Counterland	🟡	Same as above.
	Command and Control	🟡	Same as above.
	Special Operations	🟡	Same as above.
	Intelligence, Surveillance, and Reconnaissance	🟡	Same as above.
Adjacent Land Use	Strategic Attack	🟡	Army training requirements have increased adjacent to Centennial range/airspace, which results in a significant reduction to AF training activities within the Ft Bliss complex. This is partially mitigated through daily coordination with using entities.
	Counterland	🟡	Same as above.
	Special Operations	🟡	Same as above.

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Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Idesuna Jima Assessment Details

Range Mission Description

Idesuna Jima is an inert A/G bombing range that supports low and medium-altitude air-to-ground weapons employment. Typical missions include [day and night] bombing (all conventional munitions up to 2,000 lbs including JDAM & LGB), strafe, rockets, door gunnery, air interdiction, and CAS. Typical range users are F/A-18C/D from MAG-12; UH/AH-1, CH-53 and CH-46 from the 1st MAW, HH-60 & F-15C from the 18 WG, and F-18C/E/F from CVW-5. The range has a certified landing zone for helicopter insertion of ground personnel, including JTACs and EOD.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strategic Attack	PMC	PMC			PMC	PMC	NMC	NMC	PMC			NMC	PMC
Counterair													
Counterspace													
Counterland	PMC	PMC			PMC	PMC	NMC	NMC	PMC			NMC	PMC
Countersea													
Information Operations													
Electronic Combat Support	PMC				PMC	PMC	NMC	NMC	PMC				PMC
Command and Control													
Air Drop													
Air Refueling													
Spacelift													
Special Operations													
Intelligence, Surveillance, and Reconnaissance	PMC	PMC			PMC	PMC		NMC				NMC	PMC

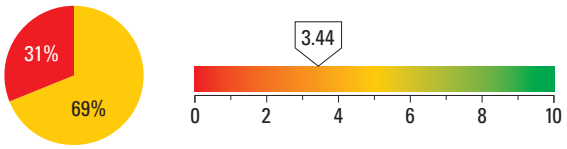
Legend: FMC PMC NMC

Encroachment Data

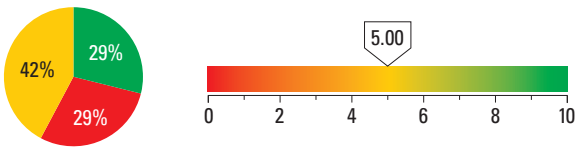
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strategic Attack		Severe	Severe		Severe		Minimal	Moderate	Minimal			Moderate
Counterair												
Counterspace												
Counterland		Severe	Severe		Severe		Minimal	Moderate	Minimal			Moderate
Countersea												
Information Operations												
Electronic Combat Support												
Command and Control												
Air Drop												
Air Refueling												
Spacelift												
Special Operations												
Intelligence, Surveillance, and Reconnaissance												

Legend: Minimal Moderate Severe

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

Idesuna Jima (W-174) capabilities are constrained by numerous factors, including small land mass, airspace altitude limitations, and infrastructure/ logistical challenges.

Summary Observations

Idesuna Jima (W-174) experiences encroachment relatively commonly, with roughly one encroachment event (reported) every couple of months. The likely cause is the range's close proximity to Tonaki Jima (2km East) . Encroachment results in lost training for aircrew attempting to utilize the range.

Idesuna Jima Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	N/A	N/A	3.75	N/A	N/A	**Encroachment Scores**	N/A	N/A	5.88	N/A	N/A
A plan to facilitate range improvements has been proposed. It will require significant coordination among all Military Services on Okinawa. The range improvements under consideration include replacement of targets along with visual improvements to make the range more closely resemble an enemy airfield.						A plan to facilitate range improvements has been proposed. It will require significant coordination among all Military Services on Okinawa. The range improvements under consideration include replacement of targets along with visual improvements to make the range more closely resemble an enemy airfield.					

Idesuna Jima Limitation Details

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strategic Attack	●	The land mass is limited and allowable impact area is very small. Aircrew cannot use certain weapons due to danger zone footprints, and cannot employ most weapons to their full system capability. Several ideas have been discussed to increase the size of the land mass, but no practical solutions have been identified at this point. A coral reef surrounds the island, but is not growing at a rate fast enough to make any impact. Attempts to increase the landmass via reclamation would be very expensive, and would likely be taken negatively by the local population. Ultimately, there is very little that is being done now, and not much that can be done in the future.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Intelligence, Surveillance, and Reconnaissance	●	Same as above, with the addition that the small land mass results in very little tactical significance for aircrew attempting to perform ISAR training. There are few tactical targets on the range, and no ability to have challenging talk-ons for aircrew, FAC(A), or JTACs.
Airspace	Strategic Attack	●	The airspace is capped at 15,000 ft, which limits the weapon and attack profiles available to aircrew. While it is possible to increase the airspace altitude through issuing a Notice to Airmen (NOTAM), this is generally not viewed favorably by the host nation and as such is rarely done.
	Counterland	●	Same as above.
	Intelligence, Surveillance, and Reconnaissance	●	Same as above, with the addition that the target area is adjacent to the northeast corner of the airspace's lateral confines. This results in significant difficulty for aircrew attempting to orbit directly overhead the range, as there is high risk of spilling out laterally. Aircraft must orbit south and west of the target area to accomplish ISAR, resulting in inefficient skew angles for targeting pods. In the past there have been some efforts to enlarge Okinawa's airspaces, but W-174 will likely not be changed.
Targets	Strategic Attack	●	The small land mass results in an extremely simple target layout. Targets cannot be swapped frequently enough due to logistical challenges of getting them to and from the range. The range is also covered in vegetation. As a result, aircrew target acquisition is extremely unchallenging, or in some cases negligible when infrared lighting conditions do not allow for proper target contrast to the surrounding land. The vegetation grows at a rate such that any work done on the range to carve the airfield layout is largely in vain. At this time there are no practical remedies for the simple target layout. Target swaps and range maintenance activities are in the planning stages, and dates have not been determined.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Intelligence, Surveillance, and Reconnaissance	●	Same as above.
Threats	Strategic Attack	●	There is no way to keep threat emitters on the island due to previously-mentioned logistical and spectrum constraints. The same applies to Smokey SAM systems. As a result, threat reaction training cannot be accomplished by aircrew. There is no known remedy at this time.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Intelligence, Surveillance, and Reconnaissance	●	Same as above.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Idesuna Jima Limitation Details

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Scoring & Feedback System	Strategic Attack	🔴	Due to logistical and environmental constraints, there is no feasible way to place permanent scoring facilities or equipment on the range. As a result, aircrew must perform their own Battle Damage Assessment, or receive it from a JTAC (if one is on the island). There is no planned remedy.
	Counterland	🔴	Same as above.
	Electronic Combat Support	🔴	Same as above.
Infrastructure	Strategic Attack	🔴	There is no infrastructure on this range, and no planned fix due to the range's remote location and environment.
	Counterland	🔴	Same as above.
	Electronic Combat Support	🔴	Same as above.
	Intelligence, Surveillance, and Reconnaissance	🔴	Same as above.
Range Support	Strategic Attack	🟡	There is currently one person responsible for range operations, safety, and authority, and a small budget to accomplish any range maintenance. Additionally, there is no way to get heavy equipment on the range without the use of a Landing Craft, Air Cushioned (LCAC). Hovercraft availability is low, meaning that the range goes for extended periods of no target refreshes or layout maintenance. The range will continue to pursue multi-service maintenance action involving Civil Engineers from the USAF, USMC, USN, and most importantly, an LCAC from Sasebo.
	Counterland	🟡	Same as above.
	Electronic Combat Support	🟡	Same as above.
MOUT Facilities	Strategic Attack	🔴	There is no MOUT facility on this range, nor will there be due to the small size, environment, encroachment issues, and lack of infrastructure.
	Counterland	🔴	Same as above.
	Intelligence, Surveillance, and Reconnaissance	🔴	Same as above.
Suite of Ranges	Strategic Attack	🟡	The range supports its current USAF rescue helicopter gunnery operations, and minimally supports USN/ USMC attack training. It is not likely to support 5th-gen air-to-ground employment to the weapon system's maximum capabilities.
	Counterland	🟡	Same as above.
	Electronic Combat Support	🟡	Same as above.
	Intelligence, Surveillance, and Reconnaissance	🟡	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Munitions Restrictions	Strategic Attack	🟡	Attack profiles for laser-guided munitions are limited due to the presence of a breakwater constructed several years ago, which penetrates the range's 2nm radius. As a result, aircrew cannot train to the full capabilities of their weapons systems. There is no planned remedy for this shortfall.
	Counterland	🟡	Same as above.
Spectrum	Strategic Attack	🟡	Frequency spectrum is limited due to host nation constraints. As a result, aircrew training with EW emitters is extremely rare on this range. Portable emitters from White Beach have been used several times, but the logistical challenges involved in using them on the target island make frequent use impossible.
	Counterland	🟡	Same as above.
Airspace	Strategic Attack	🟡	Airspace is severely limited because the 1972 host nation agreements have not been revised to account for modern weapons or tactics. As a result, users are required to fly profiles that do not mirror real world employment (helicopters excluded).
	Counterland	🟡	Same as above.

Idesuna Jima Limitation Details

Encroachment Observations

Attributes	Assigned Training Mission	Score	Comments
Adjacent Land Use	Strategic Attack	🔴	The fishing village of Tonaki Jima (several km east of the range) built a concrete breakwater that extends into the 2 NM impact radius of the range. This results in extremely frequent boat traffic entering the impact area in transit to and from their fishing locations. Range users frequently lose training because of the surface traffic encroachments. Aircrew commonly must transit to the neighboring Tori Shima (W-176) range as a result, which wastes on-station time and fuel. There is no practical solution for this problem, and it will potentially get worse as the local government and fisherman's guild continue to push for open use of the range's water space and potentially the return of the range to the host nation.
	Counterland	🔴	Same as above.
Range Transients	Strategic Attack	🔴	Same as comments in the Adjacent Land Use section, with the addition that civilians that have actually camped on the range during usage hours. The range is a Class C (uncontrolled) remote range, therefore there is no effective way to keep personnel out of the impact area. Additionally, bilingual warning signs were placed around the island several years ago, but were lost in the dozens of typhoons that affected the area since then. The 18th Wing is currently working with the Okinawa Defense Bureau to replace these signs.
	Counterland	🔴	Same as above.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Jefferson Assessment Details

Range Mission Description

The Indiana Range Complex is a grouping of geographically supportive training facilities comprised of Atterbury Range, Jefferson Range, and the Muscatatuck Center for Complex Operations. Of the three Atterbury and Jefferson are operated by the Air National Guard. Jefferson Range provides primary training for the 122nd FW, 178th FW, 180th FW, and joint training for LFEs, MEUs, SOF, SMERF, FEMA, ASOS, IW, Urban Warfare, and Homeland Defense all in conjunction with the Muscatatuck Urban Warfare Training Center (MUTC).

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strategic Attack	FMC	FMC			PMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC
Counterair		FMC			FMC	FMC	PMC	FMC	FMC			FMC	
Counterspace													
Counterland	PMC	FMC			PMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC
Countersea													
Information Operations	FMC				FMC		PMC	PMC	PMC			FMC	FMC
Electronic Combat Support	FMC				FMC		PMC	PMC	PMC			FMC	FMC
Command and Control	FMC	FMC			FMC	FMC	PMC	FMC	FMC			FMC	FMC
Air Drop	FMC	FMC			PMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC
Air Refueling		FMC				FMC		FMC	FMC				
Spacelift													
Special Operations	PMC	FMC			PMC	PMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC
Intelligence, Surveillance, and Reconnaissance	FMC	FMC			PMC	FMC	PMC	FMC	FMC			FMC	FMC

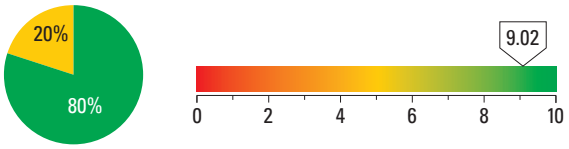
Legend: FMC, PMC, NMC

Encroachment Data

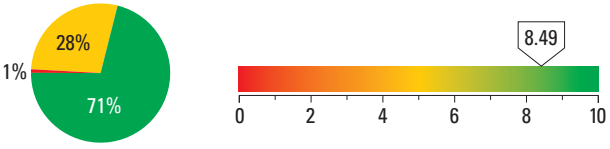
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strategic Attack	Severe	Severe	Minimal		Minimal	Minimal	Severe	Minimal	Severe	Minimal	Minimal	Minimal
Counterair	Severe	Minimal	Severe		Severe	Minimal	Severe			Minimal	Minimal	Minimal
Counterspace												
Counterland	Severe	Severe	Minimal		Minimal	Minimal	Severe	Severe	Severe	Minimal	Minimal	Minimal
Countersea												
Information Operations			Minimal				Minimal	Severe	Minimal			
Electronic Combat Support		Severe	Severe		Severe		Minimal	Severe	Minimal			
Command and Control	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Severe	Minimal	Minimal	Minimal	Minimal
Air Drop	Severe	Severe	Minimal		Minimal	Minimal	Minimal	Severe	Minimal	Minimal	Minimal	Minimal
Air Refueling	Minimal	Minimal			Minimal	Minimal	Minimal			Minimal	Minimal	Minimal
Spacelift												
Special Operations	Minimal	Severe	Minimal		Minimal	Minimal	Severe	Severe	Severe	Minimal	Minimal	Minimal
Intelligence, Surveillance, and Reconnaissance	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Severe	Minimal	Minimal	Minimal	Minimal

Legend: Minimal, Moderate, Severe

Capability Chart and Scores



Encroachment Chart and Scores



Jefferson Assessment Details

Summary Observations	Summary Observations
UXO contamination somewhat limits Jefferson Range's placement of targets and maneuver areas. Clearance of the UXO during annual residue removal is opening new areas for small arms training and target placement, and retrieval of RPA and air drops; however, further expansion and development is prohibitive under current budget.	The impact area is saturated with UXO residue, which limits the ability to conduct activities such as retrieval of dropped objects. Most requests for air drops are accompanied by a request for UXO retrieval.

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	8.75	8.75	9.14	8.97	8.97	**Encroachment Scores**	8.66	8.66	8.71	8.46	8.46
ANG has implemented a capabilities sharing program for threat emitters by mobilizing its emitter capabilities for scheduled exercises and training rotations. ANG Force Structure is projected to be relatively stable throughout the FYDP. Overall capabilities of the range complex have been increased by the annual clearance of the UXO. It is a slow process, however, due to the limitations of the EOD assets and the total amount of UXO present in the impact area.						No comments.					

Jefferson Limitation Details

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Counterland	●	The range has approximately 100 acres for development of target arrays under the current permit and MOU.
	Special Operations	●	Same as above.
Targets	Strategic Attack	●	The range is in an Army impact field with a high volume of UXO. The cost for EOD support outside of scrapes and access roads precludes expansion and development due to current budget constraints.
	Counterland	●	Same as above.
	Air Drop	●	Same as above.
	Special Operations	●	Same as above.
	Intelligence, Surveillance and Reconnaissance	●	Same as above.
Threats	Special Operations	●	Same as above.
Scoring & Feedback System	Counterair	●	Feedback at the range is currently unavailable for performance; however, a partnership with MUTC is affording opportunities for instrumentation of the range. Aircraft can debrief via P5CTS or PCDS.
	Information Operations	●	Current scoring system does not provide AAR for IO.
	Electronic Combat Support	●	Current scoring system does not provide AAR for ECS.
	Command and Control	●	Current scoring system does not provide AAR for C&C.
	Intelligence, Surveillance, Reconnaissance	●	Current scoring system does not provide AAR for ICR.
Infrastructure	Information Operations	●	Infrastructure does not support IO.
	Electronic Combat Support	●	Infrastructure does not support ECS.
Range Support	Information Operations	●	Infrastructure does not support IO.
	Electronic Combat Support	●	Infrastructure does not support ECS.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Jefferson Limitation Details

Encroachment Capabilities

Factors	Assigned Training Mission	Score	Comments
Threatened & Endangered Species	Strategic Attack	🟡	The range has several protected species surrounding the impact areas and under the MOAs.
	Counterair	🟡	Same as above.
	Counterland	🟡	Same as above.
	Air Drop	🟡	Same as above.
Munitions Restrictions	Strategic Attack	🟡	The presence of UXO limits the placement of targets. Yearly residue clearance is opening new areas for target placement.
	Counterland	🟡	Same as Strategic Attack.
	Electronic Combat Support	🟡	The range is bordered by three airports (CVG, SDF, and IND), which restricts the use of ECS.
	Air Drop	🟡	Same as Strategic Attack.
	Special Operations	🟡	Same as Strategic Attack.
Spectrum	Counterair	🟡	The range is bordered by three airports (CVG, SDF, and IND), which restricts the use of potentially jamming spectrums.
	Electronic Combat Support	🟡	The range is bordered by three airports (CVG, SDF, and IND), which restricts the use of ECS.
Airspace	Counterair	🟡	There is insufficient MOA space for Counterair training.
	Electronic Combat Support	🟡	The range is bordered by three airports (CVG, SDF, and IND), which restricts the use of ECS.
Noise Restrictions	Strategic Attack	🟡	The EA assessment is limited in noise study and needs to be expanded for future weapons systems.
	Counterair	🟡	Same as above.
	Counterland	🟡	Same as above.
	Special Operations	🟡	Same as above.
Adjacent Land Use	Counterland	🔴	The adjacent land is Army-owned and operated by FWS. FWS has a permit for approximately 49,000 acres, as compared to the range's 1,100. The Air Force's footprints are authorized outside of the range's permitted area, but that is all. Also, much of the land is not accessible due to UXO.
	Information Operations	🟡	Same as above.
	Electronic Combat Support	🟡	Same as above.
	Command and Control	🟡	Same as above.
	Air Drop	🟡	Same as above.
	Special Operations	🟡	Same as above.
	Intelligence, Surveillance, and Reconnaissance	🟡	Same as above.
Cultural Resources	Strategic Attack	🟡	Jefferson Range has oversight by BRAC 1988. Conducting operations outside the MOU as established by BRAC would require congressional authorization.
	Counterland	🟡	Same as above.
	Special Operations	🟡	Same as above.

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Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

McMullen Assessment Details

Range Mission Description

McMullen (Yankee) Range serves as the 149th Fighter Wing's Primary Training Range (PTR). The 149th Fighter Wing is a Formal Training Unit (FTU) for F-16 Fighter training. FTU syllabus requirements include Basic Surface Attack (BSA), Conventional & Tactical Target Attack, Close Air Support (CAS), Urban CAS, Low Altitude Air-to-Air Tactics and Surface Electronic Attack training. McMullen Range also supports Air Education & Training Command AT-38 operations from Randolph AFB (435th FTS). AT-38 operations include Introduction to Fighter Fundamentals (IFF) training for BSA. McMullen Range also supports the 147th Air Support Operations Squadron (ASOS) from Ellington Field, TX (TXANG) for Joint Terminal Attack Controller (JTAC) ground training requirements. Finally, various Texas Military Forces units from across the state utilize Yankee Range for air/ground training during periodic and/or state exercises, to include helicopter door gunnery, ground operations, forward deployed operations, Military Operations in Urban Terrain, Convoy, land navigation and Bivouac training.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strategic Attack	●	●			●	●	●	●	●			●	●
Counterair	●	●			●	●			●				●
Counterspace													
Counterland	●	●			●	●	●	●	●			●	●
Countersea													
Information Operations	●	●			●	●		●				●	●
Electronic Combat Support	●	●			●	●	●	●	●			●	●
Command and Control	●	●			●	●	●	●	●			●	●
Air Drop													
Air Refueling													
Spacelift													
Special Operations	●	●			●	●	●	●	●			●	●
Intelligence, Surveillance, and Reconnaissance	●	●			●	●	●	●	●			●	●

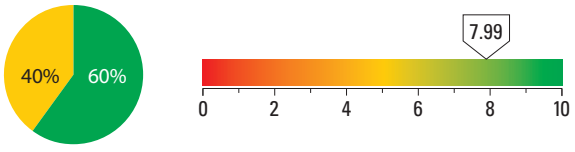
Legend: FMC ● PMC ● NMC ●

Encroachment Data

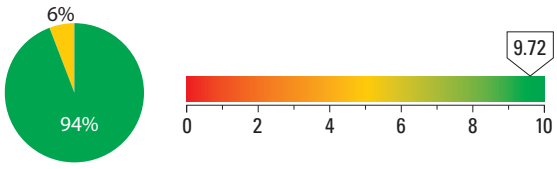
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strategic Attack	●	●	●		●	●	●	●	●	●	●	●
Counterair	●	●	●		●	●	●	●	●	●	●	●
Counterspace												
Counterland	●	●	●		●	●	●	●	●	●	●	●
Countersea												
Information Operations	●	●	●		●	●	●	●	●	●	●	●
Electronic Combat Support	●	●	●		●	●	●	●	●	●	●	●
Command and Control	●	●	●		●	●	●	●	●	●	●	●
Air Drop												
Air Refueling												
Spacelift												
Special Operations	●	●	●		●	●	●	●	●	●	●	●
Intelligence, Surveillance, and Reconnaissance	●	●	●		●	●	●	●	●	●	●	●

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

No comments.

Summary Observations

No comments.

McMullen Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2011	2011	2012
Capability Scores	8.42	8.42	6.27	7.94	7.94	**Encroachment Scores**	8.92	8.92	9.81	9.77	9.77
ANG has implemented a capabilities sharing program for threat emitters by mobilizing its emitter capabilities for scheduled exercises and training rotations. ANG Force Structure is projected to be relatively stable throughout the FYDP.						No comments.					

McMullen Limitation Details

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strategic Attack	●	Yankee Range landspace is insufficient for full-up training operations. Current landspace of approximately 2,800 acres (with only a 360 acre impact area) precludes live weapon drops and severely limits full-scale inert weapon releases. There are currently no planned actions to remedy this issue.
	Counterland	●	Same as above.
Airspace	Strategic Attack	●	The Restricted Area R-6312 over Yankee Range is inadequate for realistic maneuver. It consists of a 5nm radius circle from the surface to FL 230. R-6312 is often capped at 10K due to Houston Center and/or Navy operations. The impact to training includes limited capability for maneuver within airspace. Kingsville 3 MOA overlays R-6312, however, is often unavailable due to extensive Navy jet operations. Interim remedies have included sectoring of King 3 MOA to allow more ANG utilization in conjunction with R-6312. There is no forecasted long-term remedy.
	Counterland	●	Same as above.
	Special Operations	●	Same as above.
Threats	Strategic Attack	●	The range has limited radar threat capability. Training is limited to the RWR-Lite threat emitter (low-fidelity) and simulated FMS threats. ANG threat sharing for AN/VPQ-1 may be an option for large exercises/intense training periods, but have not used this potential capability to date.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Special Operations	●	Same as above.
	Intelligence, Surveillance, Reconnaissance	●	Same as above.
Scoring & Feedback System	Electronic Combat Support	●	No comment provided.
Infrastructure	Strategic Attack	●	The range infrastructure is comprised of portable-style buildings, which are non-permanent in nature. There is minimal communication infrastructure connectivity outside the range. There are no permanent facilities for personnel or equipment used to maintain targets, roads, fire breaks, communications equipment, structural maintenance equipment, and IT connectivity beyond minimal requirements (phone and LAN). Real property must be acquired or a lease in excess of 20 years must be executed in order to erect permanent structures/ facilities on the range. There are no currently planned actions to remedy this issue.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Command and Control	●	Same as above.
	Special Operations	●	Same as above.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

McMullen Assessment Details

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Range Support	Strategic Attack	●	The range currently lacks funding for a second, full-time range control Officer (RCO) and authorizations for additional operators/maintainers. Absences due to health, work, or family situations are a show-stopper for Class A Range operations. Det-1 has pursued funding for a second full-time RCO and personnel through state and NGB channels for several years with no success. A manpower study is currently underway to potentially remedy this issue. There is no current timeline for a solution.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.
	Command and Control	●	Same as above.
	Special Operations	●	Same as above.
	Intelligence, Surveillance, Reconnaissance	●	Same as above.
Suite of Ranges	Strategic Attack	●	The range is limited to a single range for BSA with limited standoff attack capability. It offers no live weapons training, no urban CAS target, limited EW threats, and limited airspace for maneuver. There is no planned remedy at this time.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Airspace	Strategic Attack	●	The Restricted Area R-6312 over Yankee Range is inadequate for realistic maneuver. It consists of a 5nm radius circle from the surface to FL 230. R-6312 is often capped at 10K due to Houston Center and/or Navy operations. The impact to training includes limited capability for maneuver within airspace. Kingsville 3 MOA overlays R-6312; however is often unavailable due to extensive Navy jet operations. Interim remedies have included sectoring of King 3 MOA to allow more ANG utilization in conjunction with R-6312. There is no forecasted long-term remedy.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Special Operations	●	Same as above.
	Intelligence, Surveillance, Reconnaissance	●	Same as above

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Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Melrose Assessment Details

Range Mission Description

Melrose Air Force Range (MAFR) provides unique training capability for Air Force Special Operations airpower and Combat Air Forces. The range provides unique opportunities to build and foster improved joint air to ground integration training with joint terminal attack control (JTAC). It ensures a high quality electronic combat training environment for Air Force and other DoD assets.

Capability Data

Mission Areas	Capability Attributes												
	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
Strategic Attack	PMC	FMC			FMC	FMC	FMC	FMC	FMC				
Counterair						FMC							
Counterspace													
Counterland	FMC	FMC			FMC	FMC	FMC	FMC	PMC			FMC	
Countersea													
Information Operations													
Electronic Combat Support	PMC	FMC			FMC	PMC	FMC	FMC	FMC				
Command and Control	FMC	FMC			FMC	FMC	FMC	FMC	PMC				
Air Drop	FMC	FMC			FMC	FMC		PMC	FMC				
Air Refueling						FMC							
Spacelift													
Special Operations	PMC	PMC			PMC	FMC	FMC	PMC	PMC	PMC	PMC	FMC	FMC
Intelligence, Surveillance, and Reconnaissance	FMC	PMC			FMC	FMC	FMC	FMC	PMC				

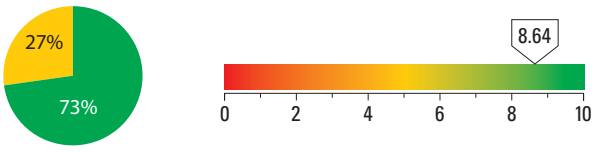
Legend: FMC, PMC, NMC

Encroachment Data

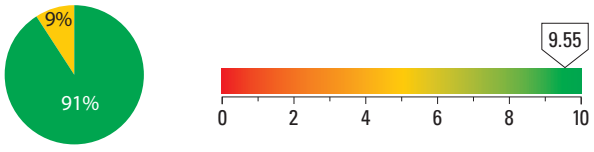
Mission Areas	Encroachment Factors												
	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Strategic Attack	Minimal	Moderate	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Counterair	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Counterspace												
Counterland	Minimal	Moderate	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Countersea												
Information Operations												
Electronic Combat Support	Minimal	Minimal	Moderate		Minimal	Minimal	Minimal	Moderate	Moderate	Minimal	Minimal	Minimal
Command and Control	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Air Drop	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Air Refueling	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Spacelift												
Special Operations	Moderate	Moderate	Minimal		Minimal	Minimal	Minimal	Moderate	Moderate	Minimal	Minimal	Minimal
Intelligence, Surveillance, and Reconnaissance	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal

Legend: Minimal, Moderate, Severe

Capability Chart and Scores



Encroachment Chart and Scores



Melrose Assessment Details

Summary Observations	Summary Observations
The legacy configuration of MAFR is not conducive to air/ground integration training with SOF air and ground forces because the legacy configuration (administration facilities in the center of the range) was designed to support primarily fighter aircraft.	Wind development continues to be a major concern. Eastern NM is viewed as a lucrative wind environment and the state of NM currently does not have any legislation requiring consideration of DoD interests in the context of renewable energy development. The relative small size of MAFR severely limits future mission expansion beyond 2023. Current plans include reconfiguring MAFR to safety place training aids, ranges, and maneuver areas in all quadrants of the range, thus, reducing any "buffer" areas on the periphery. The lesser prairie chicken is now a listed "threatened" species and will take on more emphasis due to potential habitat that has been identified on MAFR. This will limit not only tactical ground operations, but will limit the extent and direction of development thereby inhibiting training.

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	9.05	9.05	10.00	9.50	9.50	**Encroachment Scores**	9.32	9.32	9.75	9.60	9.72
The 27 SOW mission is integration of ground and air SOF and requires a unique set of training capabilities on MAFR. The range's aging infrastructure needs updating to support the new mission. Projected funding levels will be sufficient to only maintain status quo support of Air Force missions and users. The development of additional training enhancements to support integration with SOF will be a long term project.						Encroachment from wind development will continue to be a major concern to the mission at MAFR. Further air/ground integration training opportunities at this range may be curtailed due to pressures from developers. As transmission capability is developed throughout the surrounding counties, pressure from wind developers will become intense as landowners press to exercise their personal property rights. The DoD REPI program can be of great help here if willing sellers and third party organizations can be identified and brought together to provide some protection to the boundaries of MAFR. The lesser prairie chicken (LPC) potential habitat on MAFR will limit development and freedom of movement on an already small congested range. The 27 SOW has a management plan for the LPC and will aggressively manage the habitat to ensure compliance, but the result will be less capability on MAFR.					

Melrose Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strategic Attack	🟡	The Range Operating Authority is developing the 2014 Comprehensive Range Plan. This plan will propose expanding the hazard area to allow greater integration and safety when working with SOF ground forces. The expansion of the internal hazard area may constrain available targets for Combat Air Forces (CAF) users. However, historically, CAF users do not use the bulk of the 100 scorable targets MAFR, thus, it should not be difficult to provide sufficient targets for CAF users. Estimated completion date of FY2018.
	Electronic Combat Support	🟡	The new MAFR development plan will outline an increase in off-range leased areas to house MUTES transmitters. The 27 SOW currently leases seven sites off of MAFR and will seek to lease five more. If this comes to pass it will allow 27 SOW to move MUTES transmitters around to more sites and significantly change the simulated Electronic Order of Battle (EOB). Estimated completion date of FY2020.
	Special Operations	🟡	The new CRP will propose increased investment in special skills training capability to support AFSOC battlefield airmen and other SOF. Some examples include: breaching areas, shooting ranges, specialty driving courses, and other specialty training areas. Finite detail/location and funding for these training areas is under discussion.
Airspace	Special Operations	🟡	Remotely Piloted Aircraft (RPA) COAs have been established and are active to permit ops within MAFR and White Sands Missile Range. Ground-Based Sense And Avoid as well as FAA rules to allow RPA into the national airspace have progressed in the last two years. Anticipated remedy in 2016.
	Intelligence, Surveillance and Reconnaissance	🟡	Same as above.
Targets	Special Operations	🟡	Same comments as Landspace. In addition, the new range development plan proposes expansion to support Battlefield Airmen and SOF ground force training capabilities to include small arms ranges, and special skills training aids. These areas have special applicability and will require new types of "targets" such as mock-ups of targets for demolition, buildings and MOUT areas for live-fire, vehicles and other machines for render-safe activities.
Threats	Electronic Combat Support	🟡	Range Program Element funding cuts have impacted the Electronic Combat Range manager's ability to repair threat systems. Threat systems have degraded as non-fly DLRs go unrepaired. The funding situation is projected to improve by FY2016.

Figure 2-36 **Air Force** Capability and Encroachment Assessment Detail (continued)
Melrose Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Infrastructure	Air Drop	●	AFSOC and other AF units require a JPADS capable drop zone on MAFR. Current range configuration prevents the JPADS safety footprint from fitting within range boundaries. Efforts are underway to clear the geographic center of the range of all structures. This will enable JPADS airdrops to be accomplished; estimated completion date of FY2020.
	Special Operations	●	The current range configuration is a legacy when the primary users were fighters and bombers. As such, the administrative area is sited in the center of the range's hazard area and must be moved to create sufficient landspace to expand the internal hazard area. This will reduce residual risk from improperly configured ground ranges as well enable additional ground force actions. AFSOC is developing several strategies to relocate the range control tower, administration building, and fire station from the center of the range, thereby increasing special operations ground force utility. Estimated completion date of FY2020.
Range Support	Counterland	●	Increased training with SOF ground forces requires additional on-site supervision and oversight by the Range Management Office (RMO) Additional manpower will ensure the safe execution of the daily range air and ground schedule. The limited manpower impacts BA and SOF ground force counterland mission on the range. Proposed solution will come through increased SOF-funded manning of both civilian and military positions, as well as contractor support. Estimated completion date of FY2015.
	Command and Control	●	Current deconfliction is accomplished via Center Scheduling Enterprise (CSE), through procedural controls, and on-site range control officers (RCO). Currently, there is no automated or enterprise solution for tracking the multitude of range users that include tactical users, construction crews, tours, repair crews, and deliveries. The 27 SOW commissioned an innovative solution through General Dynamics to provide an off-the-shelf collaborative environment that will solve this deficit. Estimated completion date of 2020.
	Special Operations	●	The growth SOF utilization of the range has outpaced the Range Management Office's ability to support. The new air-ground mission integration with Battlefield Airmen (BA) and SOF forces has increased with the assignment of BA to Cannon AFB. Recourses, manpower, equipment and funding, have not kept up with increased ground utilization. The new air-ground integration training with BA and other SOF-centric missions is more hazardous and requires increased on-site supervision/oversight by ROOs/RCOs to ensure the safe operations on the range. The solution is coming in the form of a new range operating contract in FY2015 that will increase by 69%.
	Intelligence, Surveillance and Reconnaissance	●	Cannon AFB has assigned RPAs. With the addition of more RCO's in the new range operating contract and the activation of the Ground Based Sense and Avoid (GBSAA) it will simplify RPA operations. Estimated completion date of FY2015.
Small Arms Range	Special Operations	●	MAFR does not have a designated small arms range. The current small arms range is a located near the admin building with limited capacity and few field expedient targets. With the assignment of AFSOC Battlefield Airmen to CAFB, a new multi-purpose small arms qualification and proficiency range is required. The range should enable unit-level training and proficiency training during extended stays at MAFR.
Collective Ranges	Special Operations	●	AFSOC assigned Special Tactics Battlefield Airman have unique training requirements that include: high-angle trainers (multi-story building façade), collapsed-structure simulators, underground bunkers, convoy lanes, etc. These proposed training areas are required for STS training requirements and may be used by other ground SOF on an as-available basis.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Threatened & Endangered Species	Special Operations	●	The LPC was listed as a threatened species in March of 2014. There are approximately 4,000 acres on MAFR listed as potential habitat for the LPC. While the ROA has a LPC management plan inline with U.S. Fish and Wildlife Service requirements, the prohibition against actively using the managed areas limits range use.
Munitions Restrictions	Strategic Attack	●	Cannot employ all weapons approved. There is minimal training impact due to alternate weapons capabilities that meet training requirements. No remedy immediately available.
	Counterland	●	Same as above.
	Special Operations	●	Cannot employ approved weapons such as AGM-114 or AGM -176 on MAFR. There is some training impact due to inability of crews to maintain proficiency in employment. There is no remedy immediately available; neighboring ranges where weapons can be used are difficult to schedule and are expensive for regular usage in order for aircrews to maintain proficiency.

Melrose Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Spectrum	Electronic Combat Support	●	Four frequencies are not available: 15.4 GHz earth exploration satellite (passive), 3930MHz satellite broadcast, 668, and 878 MHz White Sands Missile Range FCC restriction, per Manual of Regulations and Procedures for Federal Radio Frequency Management, US footnote 246. This has minimal training impact; workarounds are in place. No immediate remedy available. Restrictions are not anticipated to change.
Adjacent Land Use	Electronic Combat Support	●	Land use in areas adjacent to MAFR continues to be a concern. Physical encroachment has received increased visibility on Cannon AFB and in the community because of proposed wind turbine farm within restricted airspace, as well as in the Class E airspace controlled by Cannon RAPCON. Local residents continue to pursue wind development in the lands surrounding MAFR as well as north and east of the range. Currently there are three known meteorological wind measuring towers in the areas surrounding MAFR, installed by wind speculator companies. Three concerns that wind developments bring are limitations on LZ/DZ ops as well as low-flying aircraft ops from vertical safety hazards and the impact to NVG ops (glare from high-intensity obstruction lights). No projected remedy at this time.
	Special Operations	●	The growth of the air/ground integration training with other SOF air and ground units is expanding and brings new air and ground munitions requirements. The WDZs and SDZs occupy an increasingly large portion of the range space inside the range boundary. While technically sufficient and legal, these danger zones, by their decreasing proximity to the range boundary, are closer to potential development on the boundary of the range. There is no projected remedy at this time..
Cultural Resources	Electronic Combat Support	●	There are 232 cultural / archeological sites on MAFR. The National Historic Preservation Act requires the proponent (27 SOW) to perform section 106 consultations with the state historic preservation officer prior to any development. Cultural resources limit the amount and type of development on MAFR including where additional ECM sites can be placed. No projected remedy at this time.
	Special Operations	●	There are 232 cultural sites on the range which require studies/coordination before range development begins. Project sites may have to be moved which could provide "cramped" or poorly configured training areas due to less than optimal placement. Continuing to coordinate with 27 SOCES offices during range development planning.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Mountain Home Ranges Assessment Details

Range Mission Description

Mountain Home Range Complex (MHRC) consists of two impact areas: Saylor Creek Range and Juniper Butte Range. The airspace in the MHRC consists of 100'AGL up to FL500 covering about 5600 sq mi. Saylor Creek Range and Juniper Butte Range consist of a combined 120K acre drop sites that have over 325 targets with lots of employment capacities for inert munitions. The ranges also have weapon and laser scoring systems. Along with the two ranges, there are a number of no-drop sites to replicate targets and have the ability to support the electronic range squadron that provide a variety of emitters to enhance training opportunities.

Capability Data

Mission Areas	Capability Attributes												
	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
Strategic Attack	●	●			●	●	●	●	●		●	●	●
Counterair	●	●			●	●	●		●		●		●
Counterspace													
Counterland	●	●			●	●	●	●	●		●	●	●
Countersea													
Information Operations													
Electronic Combat Support	●	●			●	●	●	●	●		●	●	●
Command and Control	●	●			●	●	●	●	●		●	●	●
Air Drop	●	●			●	●	●	●	●		●	●	●
Air Refueling	●	●			●	●	●	●	●		●	●	●
Spacelift													
Special Operations	●	●			●	●	●	●	●		●	●	●
Intelligence, Surveillance, and Reconnaissance													

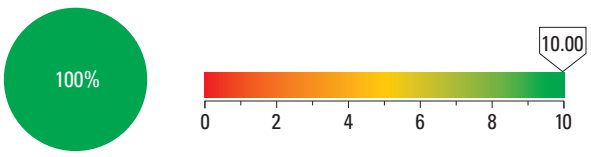
Legend FMC ● PMC ● NMC ●

Encroachment Data

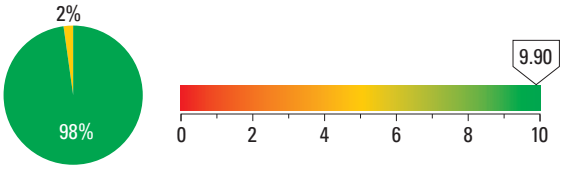
Mission Areas	Encroachment Factors												
	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Strategic Attack	●	●	●		●	●	●	●	●	●	●	●
Counterair	●	●	●		●	●	●	●	●	●	●	●
Counterspace												
Counterland	●	●	●		●	●	●	●	●	●	●	●
Countersea												
Information Operations	●	●	●		●	●	●	●	●	●	●	●
Electronic Combat Support	●	●	●		●	●	●	●	●	●	●	●
Command and Control	●	●	●		●	●	●	●	●	●	●	●
Air Drop	●	●	●		●	●	●	●	●	●	●	●
Air Refueling	●	●	●		●	●	●	●	●	●	●	●
Spacelift												
Special Operations	●	●	●		●	●	●	●	●	●	●	●
Intelligence, Surveillance, and Reconnaissance												

Legend Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Mountain Home Ranges Assessment Details

Summary Observations	Summary Observations
MHRC is a fully capable PTR with limited area expansion potential. Future enhancements will likely take the form of volume (vertical) contributions to MOA, and potentially some additional air-to-surface impact area range space in the southwest portioin of the complex. Encroachment from renewable energy sources is possible, but somewhat unlikely due to infrastructure remoteness and suitability issues.	There are minimal to no encroachment issues with the Mountain Home Range Complex (MHRC). This is largely due to the size and remote location. The only noted encroachment issue is that due to the size and limitations of the impact area, larger munition footprints limit or prevent those weapons from being expended on Saylor Creek Range. This is not a great concern because most, if not all of those munitions can be expended at Utah Test and Training Range, which is a relatively short flight away and can be easily done unrefueled by the aircraft from Mountain Home AFB.

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	10.00	10.00	10.00	10.00	10.00	**Encroachment Scores**	9.89	9.89	10.00	10.00	10.00
The MHRC airspace capabilities are likely to improve beyond the 26 July 2012 airspace expansion action. The complex includes a very large airspace area, electronic training squadron with realistic replication sites along with many drop and no-drop targets. The impact area is constantly being upgraded with new targets, and new weapon employment capabilities are always being updated. The historical encroachment engagements/actions have been minor to negligible, leaving MHRC fundamentally unconstrained. Future encroachment will likely be tied to infrastructure development; however, due to the remote nature of the complex, this will take many years to become an issue.						The MHRC airspace capabilities are likely to improve beyond the 26 July 2012 airspace expansion action. The complex includes a very large airspace area, electronic training squadron with realistic replication sites along with many drop and no-drop targets. The impact area is constantly being upgraded with new targets, and new weapon employment capabilities are always being updated. The historical encroachment engagements/actions have been minor to negligible, leaving MHRC fundamentally unconstrained. Future encroachment will likely be tied to infrastructure development; however, due to the remote nature of the complex, this will take many years to become an issue.					

Mountain Home Ranges Limitation Details

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Munitions Restrictions	Strategic Attack		There are weapon footprint issues with larger weapons, which leads to run-in restrictions on certain weapons and inability to use others. Impact is relatively minor because other ranges (i.e., UTTR) can be used for larger munitions
	Counterland		Same as above.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Nevada Test and Training Range (NTTR) Assessment Details

Range Mission Description

NTTR supports DoD electronic combat testing, tactics development, and advanced air combat composite force training as well as DoD and Department of Energy (DOE) testing, research, and development. HQ NTTR develops, operates, and maintains the NTTR, comprised of 2.9 million acres and 12,000 square nautical miles of airspace. Major Test and Training Units include 422 TES, Red Flag (414 CTS), USAF Weapons School (USAFWS) and the 432 OG. The 57 WG is the predominate training wing for large force exercises and the USAFWS. The 432 WG operates at Creech AFB.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strategic Attack	FMC	FMC			PMC	PMC	PMC	FMC	FMC				FMC
Counterair		PMC			PMC	NMC	PMC	PMC	NMC				FMC
Counterspace													
Counterland	FMC	FMC			FMC	FMC	FMC	PMC	PMC	FMC		FMC	FMC
Countersea													
Information Operations	FMC	FMC			NMC	PMC	PMC	FMC	PMC				FMC
Electronic Combat Support	FMC	FMC			PMC	PMC	PMC	FMC	PMC				FMC
Command and Control	FMC	FMC			PMC	FMC	FMC	NMC	FMC			FMC	
Air Drop	FMC	FMC				FMC	FMC	FMC	FMC				FMC
Air Refueling	FMC	FMC				FMC	FMC	FMC	FMC				FMC
Spacelift													
Special Operations	FMC	FMC			FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC	FMC
Intelligence, Surveillance, and Reconnaissance	FMC	FMC			FMC	FMC	FMC	FMC	FMC				FMC

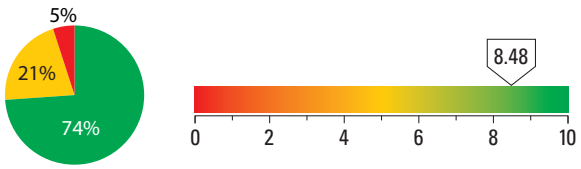
Legend: FMC, PMC, NMC

Encroachment Data

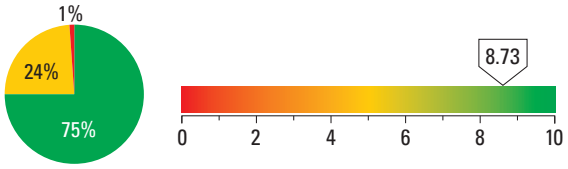
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strategic Attack	Moderate	Moderate	Minimal		Minimal	Minimal	Minimal	Minimal	Moderate	Minimal	Moderate	Minimal
Counterair	Moderate	Minimal	Moderate		Minimal	Minimal	Moderate	Moderate	Minimal	Minimal	Minimal	Minimal
Counterspace												
Counterland	Moderate	Moderate	Moderate		Minimal	Minimal	Minimal	Moderate	Moderate	Minimal	Moderate	Minimal
Countersea												
Information Operations	Minimal		Minimal		Minimal		Minimal	Moderate	Minimal	Minimal		Minimal
Electronic Combat Support	Minimal		Moderate		Minimal	Minimal	Minimal	Severe	Minimal	Minimal	Minimal	Minimal
Command and Control	Minimal		Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Air Drop	Moderate				Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Air Refueling	Minimal		Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Spacelift												
Special Operations	Moderate	Moderate	Moderate		Minimal	Minimal	Minimal	Moderate	Moderate	Minimal	Moderate	Minimal
Intelligence, Surveillance, and Reconnaissance	Minimal	Minimal	Moderate		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal

Legend: Minimal, Moderate, Severe

Capability Chart and Scores



Encroachment Chart and Scores



Nevada Test and Training Range (NTTR) Assessment Details

Summary Observations	Summary Observations
The areas most impacting performance are Threats, Targets, Scoring and Feedback Systems (in that order). Mission areas impacted are: Counterair, Strategic Attack, Electronic Combat, Counterland, and Information Operations. Capability shortfalls and modernization requirements are being discussed within the Air Force. In January 2014, the USAFWC hosted a Range Summit with MAJCOM and HAF leads to work toward developing viable solutions	Renewable Energy (RE) proposals and project siting surrounding the NTTR are spectrum interference impacts technically known as RF/EMI compatibility issues (also known as Electro Magnetic Environment (EM)) and are of the greatest concern. In addition, land development and subsequent overflight noise issues are increasing under the Desert MOA. Next, efforts to develop the southern ranges in concert with FWS for co-use of the Desert National Wildlife Range (DNWR) per the stipulations in the Military Lands Withdrawal Act of 1999 are challenging. Finally, development of foreign business interests adjacent to the NTTR is a new area of concern. Key Mission areas impacted are (in order): Electronic Combat Support, Counterland, Counterair, Strategic Attack, and Special Operations.

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	8.22	8.22	8.39	8.31	8.31	**Encroachment Scores**	8.62	8.24	8.26	8.56	8.71
Threats and Targets went to red due to the lack of a capability to support 5th Generation Aircraft Training Requirements. Due to threat system sustainment challenges with a lack of a trained workforce, Range Support for Counterair went to red. This is expected to occur after 2015 when new threat systems are fielded. It has also impacted retainability of the current contract workforce with the budget cuts in the last years. Electronic Combat and Information Operation areas are the same as the previous assessments. The target section for Information Operations went to red due to the lack of SCADA targets. Under Infrastructure, Command and Control went to red due to the lack of a Combined Operations Center (COC) Special Access Program Facility (SAPF) to accommodate the required classification data merge in the Range Control Center.						The wilderness study area impacts that were listed under Threatened and Endangered (T&E) category the 2011 SRR were removed since they are non T&E related. These were changed to yellow under the Adjacent Land Use category for Counterland and Special Operations, as these are the mission areas primarily affected by the FWS limitations. Due to foreign business interests near the NTTR (north of R-4807 and R-4809), the Adjacent Land Use category, under Information Operations was coded yellow as the lead area to code this concern. The spectrum category remains yellow in four areas to reflect RE impacts. The only red was RE impacts on Electronic Warfare as "Electronic Combat Support". Cultural Resources and Wetlands have the same impact as the 2011 SRR. Siting of RE proposals are being addressed through the OSD Energy Siting Clearinghouse review process. Additionally, each Air Force installation is tasked to develop an Installation Complex Encroachment Management Action Plan (ICEMAP). Through these plans, units identify specific engagement actions needed to address potential encroachment issues including land development, electromagnetic interference and protection of classified information. HQ NTTR has been updating encroachment pressures and process issue problems in the Defense Readiness Reporting System (DRRS) reports.					

Nevada Test and Training Range (NTTR) Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Airspace	Counterair		There are increasing restrictions on the range due to noise complaints, urban encroachment, and natural lands. Supersonic flight, chaff, flare, and overflight restrictions continue to shrink the NTTR airspace. Nellis has established noise sensitive areas around communities under the two MOAs.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)
Nevada Test and Training Range (NTTR) Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Targets	Strategic Attack	🟡	There are no sensor fusion targets for 5th generation aircraft to train against with the aircraft's advanced sensors. Developing this capability requires costly target infrastructure. This was noted in the 2025 Air Test and Training Range Enhancement Plan, which states "The technology of precision-guided munitions has generally shifted the focus of training from weapon employment to target identification, subsequently increasing the complexity of the targets required to accomplish realistic training." Some training may be able to be conducted in the simulators or by live and synthetic until the Live can be supported with relevant hard targets that will interface with the 5th generation aircraft's advanced sensors.
	Counterair	🟡	Same as above.
	Information Operations	🔴	There are no self-contained Information Operations (IO) Targets on the NTTR. The lack of Supervisory Control and Data Acquisition (SCADA) targets for IO interface was the predominate concern in rating this area. All IO play is based on the user equipment they bring to the range. The range can facilitate IO play, but has no organic capability. HQ NTTR continues to work with JIOR to provide a mobile service which can be deployed at the Urban Operations Complex (UOC) on Range 62.
	Electronic Combat Support	🟡	The range lacks a complete electronic target set. Electronic Attack (EA) platforms do not get real-time feedback on their capabilities and their effects during training. The range continues to work on the Digital Integrated Air Defense System (DIADS) suite in order to show a real-time degradation on red systems based on real effects of jamming platforms..
	Command and Control	🟡	There are no Red C2 Targetable Nodes for Information Operations. Jamming platforms do not get real-time feedback on operations. With DIADS implementation and IO suite, the range should better simulate a degraded C2 system while maintaining safety.
Threats	Strategic Attack	🟡	There are limited relevant double digit threat systems for 5th generation aircraft to test and train against. This capability requires costly threat infrastructure that has long lead development time. As noted in the 2025 Air Test and Training Range Enhancement Plan, "The Air Force is supporting these efforts through collaboration with the DoD and the Department of the Navy to develop and field the Advanced Radar Threat System version 1 (ARTS1) and Advanced Radar Threat System version 2 (ARTS2). These systems provide a more realistic training environment because they will close the gap between our current and required threat simulation capabilities. Some training may be able to be conducted in the 5th generation simulators, and live and synthetic systems may supply added double digit threat systems after 2018 (for certain platforms).
	Counterair	🔴	Same as above.
	Information Operations	🟡	There are no Information Operations (IO) Threats on NTTR. All IO play is based on the user equipment they bring to the range. The range can facilitate IO play, but no organic capability. HQ NTTR continues to work with JIOR to provide a mobile service which can be deployed at the Urban Operations Complex (UOC) on Range 62.
	Electronic Combat Support	🟡	The range lacks a complete electronic target set. Electronic Attack (EA) platforms do not get real-time feedback on their capabilities and their effects during training. The range continues to work on the Digital Integrated Air Defense System (DIADS) suite in order to show a real-time degradation on red systems based on real effects of jamming platforms.
Scoring & Feedback Systems	Strategic Attack	🟡	There are instrumentation challenges associated with podding 4th and 5th generation aircraft with encrypted capability; it requires costly instrumentation infrastructure on the aircraft and also ground support. The Air Force is evaluating technical solutions, which may include a modified test pod using the Common Range Integrated Instrumentation System (CRIIS). The P-5 pod will solve some of the data limitations but must be encrypted. Training can still be supported with the current NACTS (P-4) system for feedback, but has limitations associated with classification on data downlinks. The challenge is supporting the interface with the 5th generation aircraft's advanced weapons bus and allowing for real time kill removal
	Counterair	🟡	Same as above.
	Information Operations	🟡	There are no IO Threats on the NTTR. All IO play is based on the user equipment they bring to the range. The range can facilitate IO play, but no organic capability. HQ NTTR continues to work with JIOR to provide a mobile service which can be deployed at the Urban Operations Complex (UOC) on Range 62.
	Electronic Combat Support	🟡	The range lacks a complete electronic target set. EA platforms do not get real-time feedback on their capabilities and their effects during training. The range continues to work on the DIADS suite in order to show a real-time degradation on red systems based on real effects of jamming platforms.

Nevada Test and Training Range (NTTR) Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Infrastructure	Counterair	🟡	There are infrastructure support issues in modernization and sustainment that are projected to occur in FY2015. In the last several years, budget cuts have adversely affected manpower for communications systems, along with infrastructure support for roads, HVAC and power. Future years will likely continue to be challenging.
	Counterland	🟡	Same as above.
	Command and Control	🔴	There are infrastructure issues for modernization in the Range Control Center at Bldg 200 at Nellis AFB. The Combined Operations Center (COC) needs to be upgraded to a vault level facility rated to SCI and SAP/SAR levels to handle the classified information from feedback systems (aka a Special Access Program Facility (SAPF)). HQ NTTR is currently reviewing the feasibility and design standards to upgrade the COC to a SAPF. While HQ NTTR can work around the lack of a SAPF, the quality of relevant training suffers since the classified data cannot be merged.
Range Support	Counterair	🔴	There are hardware and support issues in modernization and sustainment that are projected to occur in FY2015. In the last several years, budget cuts have adversely affected manpower for communications systems, along with infrastructure support for roads, HVAC and power. Future years will likely continue to be challenging.
	Counterland	🟡	Same as above.
	Information Operations	🟡	Same as above.
	Electronic Combat Support	🟡	Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Threatened & Endangered Species	Strategic Attack	🟡	T&E species concerns were mentioned in the 99 ABW's Draft ICEMAP. The predominant mission impact concerns are Desert Tortoise habitat and possible eagle habitat. Issues with Desert Tortoise habitat has workarounds through Section 7 consultation. Eagle habitat will require further studies on the NTTR and the final remedy is unknown at this time. Eagle habitat would need to be protected during nesting periods, so air operations may be curtailed in certain areas of the NTTR.
	Counterair	🟡	Same as above.
	Counterland	🟡	Same as above.
	Air Drop	🟡	Same as above.
	Special Operations	🟡	Same as above.
Munitions Restrictions	Strategic Attack	🟡	Munitions use is restricted within the Desert National Wildlife Refuge. FWS has primary jurisdiction of the southern ranges, and several decades ago nominated approximately 590,000 acres of co-managed land within the southern range as proposed wilderness. This designation as a Wilderness Study Area (WSA) severely restricts the ability to place threats or targets at higher elevations or provide future capabilities/ modernization to microwave and communication data links. HQ NTTR is restricted from mountainous areas which limits the ability to fully utilize the land. The WSA has not been acted on for close to 40 years, and resolution would require agreement between numerous entities, including DoD, DOI, and Congress.
	Counterland	🟡	Same as above.
	Special Operations	🟡	In addition to the areas noted above, the WSA severely restricts the ability to go off road or use non-sanctioned trails at the high elevations, which impacts Special Forces land movements on the Series 60 ranges. This is being evaluated by RAND in the Test & Training Space Needs Statement (T/TSNS) in preparation for the future land withdrawal renewal.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)
Nevada Test and Training Range (NTTR) Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Spectrum	Counterair	●	The likely auction of existing federal spectrum bands for commercial broadband impacts the P5 Air Combat Training System (ACTS) frequency band used for NTTR instrumentation pods. The ACTS transition plan has been submitted to Air Force Spectrum Management Office, and includes maintaining a minimum of two ACTS frequency pairs at NTTR (one to support Red Flag/Weapons School/422 TES, and another for Green Flag/National Training Center). The transition plans are being compiled for submission to the National Telecommunications and Information Administration (NTIA). DoD continues to work with the NTIA (Dept of Commerce) and the FCC to determine ways to share spectrum when possible. Migration efforts associated with spectrum auctions will require funding which must be paid through auction proceeds.
	Counterland	●	GPS jamming is limited due to FAA restrictions and the time periods required for approvals. NTTR currently limits GPS operations to small areas.
	Electronic Combat Support	●	HQ NTTR has conducted assessments on the impact of over 185 wind, 65 solar, & multiple power line and other RE projects surrounding the NTTR in conjunction with 99 ABW/CCY as the Installation Encroachment Management Team lead office (note that 99 ABW/CCY was recently reorganized under the 99 CES as 99 CES/CENPD). RE continues to pose one of the most significant threats to testing and training needed for National Defense objectives. AFMC and ACC have developed a series of maps, referred to as High Risk of Adverse Impact Zones (HRAIZ), which can be used to simplify and expedite the review of RE projects. The HRAIZ maps have been submitted to the OSD Energy Siting Clearinghouse for use during the review process and developer engagements.
	Special Operations	●	Same as Counterland.
	Intelligence, Surveillance and Reconnaissance	●	Same as Electronic Combat Support.
Noise Restrictions	Counterair	●	Increased urban development in traditional rural areas surrounding the NTTR has resulted in an increase in noise complaints from Alamo, Hiko, Caliente, Las Vegas and Pahrump. Air Operations from Nellis AFB to the NTTR are causing increased public concern and political pressure from developments under NTTR airspace. Aircraft flight corridors from Nellis are seeing proposals for growth that will require review by Nellis and the NTTR for their impacts on military operations. HQ ACC and AF/A7C are requesting a noise study for FY2014, and 99 ABW/PA has an active outreach program (this program includes several 99 ABW, 57 WG and HQ NTTR personnel). HQ NTTR also supports mitigation efforts through public awareness briefs.

Nevada Test and Training Range (NTTR) Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Adjacent Land Use	Counterair	🟡	Increased development of RE projects in outlying rural areas adjacent to the NTTR has the potential to impact the range's ability to operate in a relatively clean electronic environment. The combination of radar operations, employment of low observable technologies and need for unhampered feedback to the radars makes wind turbines incompatible with several critical U.S. Air Force Warfare Center (USAFWC) mission areas, to include weapons system certification, tactics validation, advanced weapon system training, realistic threat representation, and large force exercises. AFMC and ACC have developed a series of maps, referred to as HRAIZ, which can be used to simplify and expedite the review of RE projects. The HRAIZ maps have been submitted to the OSD Energy Siting Clearinghouse for use during the review process and developer engagements.
	Counterland	🟡	Munitions use is restricted within the Desert National Wildlife Refuge. USFWS has primary jurisdiction of the southern ranges, and several decades ago nominated approximately 590,000 acres of co-managed land within the southern range as proposed wilderness. This designation as a WSA severely restricts the ability to place threats or targets at higher elevations or provide future capabilities/modernization to microwave and communication data links. HQ NTTR is restricted from mountainous areas which limits the ability to fully utilize the land. The WSA has not been acted on for close to 40 years, and resolution would require agreement between numerous entities, including DoD, DOI, and Congress.
	Information Operations	🟡	Development of foreign business interests adjacent to the NTTR is an area of concern. As stated in the 2025 Air Test and Training Range Enhancement Plan, "An emerging challenge is the increasing presence of foreign business interests in the vicinity of our sensitive test and training ranges. When foreign companies build or acquire energy and mining projects near Air Force ranges, they gain the ability to maintain a permanent presence near areas vital to national security which affords them an opportunity to collect critical information regarding national defense programs." The report goes on to say, "Foreign investment to acquire U.S. business that operate on land around DoD test and training ranges is another form of compatible land use that presents very unique challenges to range enhancement plans. The Air Force is active in the Council on Foreign Investment in the United States (CFIUS) process to evaluate the security risks of foreign investment in projects near test and training ranges."
	Electronic Combat Support	🔴	Same as Counterair.
	Special Operations	🟡	Same as Counterland.
Cultural Resources	Strategic Attack	🟡	99 CES/CEI manages significant cultural sites via the Cultural Resource Management Plan. Seventeen Native American tribes have cultural affiliation with the NTTR, and the 99 CES/CEI has established working relationships. There are 215 acres of archaeological avoidance areas on the NTTR. Most of the cultural sites are outside the operating areas for most ground activities. Personnel are briefed to avoid the cultural sites with ground disturbing activities IAW the 99 ABW's Cultural Resource Management Plan. However, when site-specific mission essential activities are identified by HQ NTTR, cultural resource concerns are investigated and coordinated with 99 CES/CEI. Consultations are also made with Native American tribes as required.
	Counterland	🟡	Same as above.
	Special Operations	🟡	Same as above.
Wetlands	Strategic Attack	🟡	There are over 120 seeps and springs on the NTTR. While these are not classified as true "Section 404 wetlands", they are areas that should not be disturbed. Some are significant watering points for wild horses, antelope, bighorn sheep, deer and numerous small mammals, birds and reptiles. The significant sites are fenced to exclude inadvertent ground activities. Most of the springs and seeps are outside major NTTR operating areas for most ground activities. Personnel are briefed to avoid the seeps and springs with ground disturbing activities when practical, IAW with the 99 ABW's Integrated Natural Resource Management Program.
	Counterland	🟡	Same as above.
	Special Operations	🟡	Same as above.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Oklahoma Assessment Details

Range Mission Description

Oklahoma R-2202 is managed by the U.S. Army. The USAF is a user, thus no formal USAF mission statement. The range does, however, support both live and inert freefall ordnance deliveries, both offensive and defensive electronic combat operations; as well as small arms and indirect fire missions. It is one of two key target areas utilized for RED FLAG-Alaska and NORTHERN EDGE Exercises.

Capability Data

Mission Areas	Capability Attributes												
	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
Strategic Attack	FMC	FMC			PMC	FMC	FMC	FMC	FMC			FMC	FMC
Counterair	FMC	FMC			FMC	FMC	FMC	FMC	FMC			FMC	FMC
Counterspace	FMC	FMC			FMC	FMC	FMC	PMC	FMC			FMC	FMC
Counterland	PMC	FMC			FMC	FMC	FMC	FMC	FMC			FMC	FMC
Countersea													
Information Operations	FMC	FMC			FMC	FMC	FMC	PMC	FMC			FMC	FMC
Electronic Combat Support	FMC	PMC			PMC	PMC	FMC	PMC	FMC			FMC	FMC
Command and Control	FMC	FMC			FMC	FMC	FMC	FMC	FMC			FMC	FMC
Air Drop	PMC	PMC			PMC	FMC	FMC	PMC	FMC			PMC	PMC
Air Refueling	FMC	FMC			FMC	FMC	FMC	FMC	FMC			FMC	FMC
Spacelift													
Special Operations	FMC	FMC			FMC	FMC	FMC	FMC	FMC			FMC	FMC
Intelligence, Surveillance, and Reconnaissance	FMC	FMC			PMC	PMC	FMC	PMC	FMC			FMC	FMC

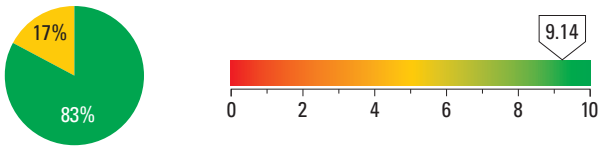
Legend: FMC, PMC, NMC

Encroachment Data

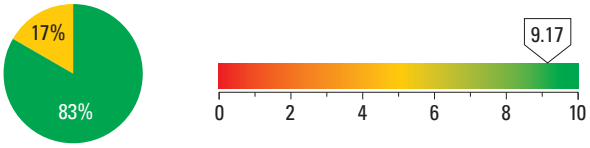
Mission Areas	Encroachment Factors												
	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
Strategic Attack	Minimal	Moderate	Moderate		Minimal	Minimal	Minimal	Moderate	Minimal	Minimal	Moderate	Minimal
Counterair	Minimal	Moderate	Moderate		Minimal	Minimal	Minimal	Moderate	Minimal	Minimal	Minimal	Minimal
Counterspace	Minimal	Minimal	Moderate		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Counterland	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Moderate	Minimal	Minimal	Moderate	Minimal
Countersea												
Information Operations	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Electronic Combat Support	Minimal	Minimal	Moderate		Moderate	Minimal	Minimal	Moderate	Minimal	Minimal	Minimal	Minimal
Command and Control	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Air Drop	Minimal	Moderate	Minimal		Moderate	Minimal	Minimal	Moderate	Minimal	Minimal	Moderate	Minimal
Air Refueling	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Spacelift												
Special Operations	Minimal	Minimal	Moderate		Moderate	Minimal	Minimal	Moderate	Minimal	Minimal	Minimal	Minimal
Intelligence, Surveillance, and Reconnaissance	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal

Legend: Minimal, Moderate, Severe

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

Oklahoma is a sub-set of R-2202. It is the name for USAF's only allowed impact area. The lands of R-2202, including Oklahoma Impact Area, are managed by the U.S. Army; USAF is only a user group. Access is limited to helicopter year-round, and/or an over-water ice bridge (if built) every other year. Capabilities are primarily impacted by its isolated nature, and its surrounding terrains, along with self-imposed Army and USAF regulatory restrictions.

Summary Observations

There are few encroachment issues. Oklahoma Impact Area with R-2202 is more remote and isolated than all other ranges in Alaska. The first encroachment concern is from multiple agencies—U.S. Army and USAF desiring simultaneous usage. When Army units are not deployed, this scheduling conflict can be significant, but is generally handled well with proactive scheduling. The second concern centers on full spectrum ordnance deliveries of JDAM and GBU/SDB. The final concern relates to limits/prohibitions on live ordnance, chaff, and flare expenditures during the dry summer months.

Oklahoma Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	7.31	7.31	9.19	N/A	9.14	**Encroachment Scores**	9.09	9.09	8.88	N/A	9.17
Capabilities have not increased/decreased significantly over the last several years. Unless a significant change in aircraft basing in Alaska, there are no projected capabilities changes expected over the next 5 years.						There has been limited to no changes in encroachment impacts over the last several years. Similarly, there are no projected changes over the next five years. The land is so remote that human encroachment is near impossible. Likewise, wildlife populations are stable and not projected to affect range operations.					

Oklahoma Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Counterland	●	Oklahoma is isolated from live ground maneuver capability most of the year. Access in the summer requires helicopter lift. In winter, access is only via ice bridge (if built). JCAS operations can be conducted if JTACS are flown into the range, but ground maneuver must be simulated.
	Air Drop	●	Oklahoma Impact Area (within R-2202) does not have an LZ/DZ; it is simply an impact area. There is no remedy. When including some of the surrounding restricted lands of R-2202, there are adequate DZ/LZs. The main LZ/DZ is lays within Donnely Training area, approximately 20 miles east of Oklahoma Impact Area.
Airspace	Electronic Combat Support	●	Same as above.
	Air Drop	●	Same as above.
Targets	Strategic Attack	●	Poor range access (winter-only if ice bridge built) limits the types of targets/materials. Unable to conduct EOD during 7 month winter periods, so short EOD and target build seasons conflict with summer flight operations. There is sensitive tundra in most areas surrounding existing target sets. Target variety is very good, but replenishment/expansion capability is limited. There is no remedy.
	Electronic Combat Support	●	Due to the isolated nature and fact that Oklahoma is designated as an Impact Area only, threats are emplaced in land/air spaces surrounding the impact area—there is no significant degradation to training.
	Air Drop	●	There is no LZ/DZ in the Oklahoma Impact Area. The range relies on eastern R-2202 training lands.
	Intelligence, Surveillance and Reconnaissance	●	Due to its isolated nature and fact that Oklahoma is designated as an Impact Area only, temporary C4ISR targets are generally not emplaced. They can be, but at high logistical costs.
Threats	Electronic Combat Support	●	Due to its isolated nature and fact that Oklahoma is designated as an Impact Area only, threats are emplaced in land/air spaces surrounding the impact area. There is no significant degradation to training, other than systems are generally unmanned and are older/less sophisticated in nature.
	Intelligence, Surveillance and Reconnaissance	●	Due to its isolated nature and fact that Oklahoma is designated as an Impact Area only, temporary C4ISR targets are generally not emplaced. They can be, but at high logistical costs.
Infrastructure	Counterspace	●	Due to Oklahoma Impact Area's isolated nature, limited infrastructure in its classic sense exists. All systems requiring power are provided by remote operated generators. Communications are via microwave. There is no rail access; road access is via winter ice bridge (if built).
	Information Operations	●	Same as Counterspace.
	Electronic Combat Support	●	Same as Counterspace.
	Air Drop	●	Due to Oklahoma Impact Area's isolated nature, limited infrastructure in its classic sense exists. All systems requiring power are provided by remote operated generators. Communications are via microwave. There is no rail access. Road access via winter ice bridge (if built). Additionally, as noted previously, there are no LZ/DZs in Oklahoma Impact Area, nor is there infrastructures currently to support such.
	Intelligence, Surveillance and Reconnaissance	●	Same as Counterspace.
MOUT Facilities	Air Drop	●	There is no LZ/DZ in Oklahoma Impact Area. The range relies on eastern R-2202 training lands.
Suite of Ranges	Air Drop	●	Same as above.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)
Oklahoma Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Munitions Restrictions	Strategic Attack		Though robust in size, R-2202 remains a challenge to employ full spectrum JDAM/SDB and some deliveries of GBU munitions. Occasional scheduling conflicts between Army/USAF hampers training. More detailed and accurate WDZ footprints are allow more realistic ordnance deliveries. Better coordination with R-2202 range managers aids with resolving scheduling conflicts. Summer ordnance restrictions (via BLM directives) intended to limit fire hazards precludes large numbers of live ordnance training events. There is no known remedy.
	Counterair		The range has no capability to support employment of live air-to-air missiles. There is some capability for employment of forward firing 20mm cannon. There is no known remedy.
	Air Drop		Oklahoma Impact Area (within R-2202) does not have an LZ/DZ; it is simply an impact area. There is no known remedy. If including some of the surrounding restricted lands of R-2202, there are adequate DZ/LZs.
Spectrum	Strategic Attack		The remote nature of range limits threat spectrum to lower fidelity unmanned threats; there is no known remedy. See also Electronic Combat Support immediately below.
	Counterair		Same as above.
	Counterspace		There are severe GPS Jamming restrictions, which can be partially mitigated if events are planned and scheduled well in advance.
	Electronic Combat Support		Limitations to use of spectrum hampers Threat Engagement and C4ISR training. The range is unable to exercise full systems usage. A remedy to this limitation is detailed and persistent applications procedures and processes through the AF Spectrum Management Office in order to garner more spectrum approvals. Some gains made to allow use of two previously non-allowed systems.
	Special Operations		Due to isolated nature and limited infrastructures, there are no SATCOM or special waveforms resident year-round. Units are required to provide their own accesses. Otherwise, there are no limits to this spectrum usage.
Airspace	Electronic Combat Support		The Oklahoma Impact Area is a relatively small restricted area. It is too small for large scale exercises with multiple platforms/weapons. If combined with other surrounding restricted spaces and MOA airspaces, the area would be more than adequate. There is no remedy.
	Air Drop		There is no air drop DZ available in the Oklahoma Impact Area. The fact it is an Impact Area only (right now), and that it is isolated, limits air drop capability.
	Special Operations		Same as Electronic Combat Support.
Adjacent Land Use	Strategic Attack		The eastern lands are Army military land, off limits to USAF. The western lands are state/federal/and private in-holdings. Large tracks of western lands are prime hunting areas. Without greater restricted area buffer of Oklahoma Impact Area, full spectrum ordnance deliveries are hampered.
	Counterair		Same as above.
	Counterland		Same as above.
	Electronic Combat Support		Same as above.
	Air Drop		There is no DZ/LZ in Oklahoma Impact Area. The main LZ/DZ is in Eastern R-2202 and is bordered by civilian flyway and a main highway to its west, Ft. Greeley, and its airfield to the north, and sensitive and culturally significant lands to the south.
	Special Operations		Same as Strategic Attack.
Wetlands	Strategic Attack		Sensitive tundra areas exist within and around the range. The range is unable to emplace realistic targets and/or EC training equipment. There is no known remedy.
	Counterland		Same as above.
	Air Drop		There is no DZ/LZ in Oklahoma Impact Area. Due to sensitive tundra areas in and around range, it is difficult to develop any. There is no remedy.

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Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Pilsung Assessment Details

Range Mission Description

Pilsung Range R-110 is a Primary Visual Flight Rules tactical range in the Republic of Korea (ROK), located approximately 87 nm east of Osan Air Base. The range is jointly operated by USAF & ROKAF for practice of tactical deliveries with inert training or live ordnance.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strategic Attack	FMC	PMC			FMC	PMC	FMC		FMC				PMC
Counterair	PMC	PMC			FMC	FMC	FMC	FMC	FMC				FMC
Counterspace													
Counterland	PMC	PMC			PMC	PMC	PMC	NMC	NMC				PMC
Countersea													
Information Operations													
Electronic Combat Support	FMC	FMC			FMC	FMC	NMC	FMC	FMC				FMC
Command and Control													
Air Drop													
Air Refueling													
Spacelift													
Special Operations	FMC				FMC	FMC	FMC	FMC	FMC				FMC
Intelligence, Surveillance, and Reconnaissance													

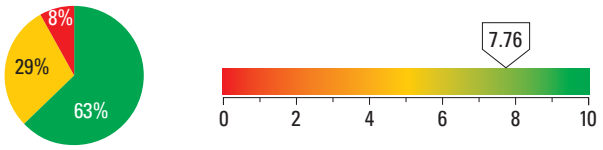
Legend: FMC PMC NMC

Encroachment Data

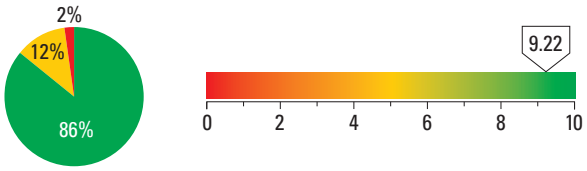
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strategic Attack	Minimal	Moderate	Moderate		Moderate	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Counterair	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Counterspace												
Counterland	Minimal	Moderate	Moderate		Moderate	Minimal	Moderate	Minimal	Minimal	Minimal	Minimal	Minimal
Countersea												
Information Operations												
Electronic Combat Support	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Command and Control												
Air Drop	Minimal	Severe				Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Air Refueling												
Spacelift												
Special Operations	Minimal	Moderate	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Intelligence, Surveillance, and Reconnaissance												

Legend: Minimal Moderate Severe

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

The main operational constraint from encroachment is Range Fire conditions. The entire area is thickly forested and live/inert/strafe munitions cause constant fires throughout the summer, which leads to lost training time. Due to the limited size of the range, JDAM, Maverick, and Hellfire munitions are not permitted. The only alternative is Jik-do, which has it's own issues with boats being within the vicinity of the target. Due to noise abatement issues and fire concerns, night strafe is not permitted. This leaves Jik-do as the only option for night strafe in Korea.

Summary Observations

The main operational constraint from encroachment is Range Fire conditions. The entire area is thickly forested and live/inert/strafe munitions cause constant fires throughout the summer, which leads to lost training time. Due to the limited size of the range, JDAM, Maverick, and Hellfire munitions are not permitted. The only alternative is Jik-do, which has its own issues with boats being within the vicinity of the target. Due to noise abatement issues and fire concerns, night strafe is not permitted. This leaves Jik-do as the only option for night strafe in Korea.

Pilsung Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	7.12	7.12	7.12	N/A	7.21	**Encroachment Scores**	9.34	9.34	9.34	N/A	9.25
Capability scores are slightly improved from last previous years due to improved incorporation of EW ranges and added capabilities for ground troops to utilize range.						Overall, encroachment has actually improved this year versus the previous years. Air Drop was added as a capability since there are off-peninsula squadrons requesting this capability. The lower numerical this year is because the range currently does not have a process in place to safely execute Air Drop yet; it is a work in progress.					

Pilsung Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Counterair	🟡	As noted in the encroachment section, heavy vegetation and fire concerns constrain the ability to drop ordnance. Even during good weather seasons, aircraft may arrive at the range and find the fire code has been elevated due to a previous range fire. range is looking at a system which can notify the aircrews of fire conditions earlier (i.e., a range NOTAM system). Currently, every flight lead has to call the range in order to get current status information.
	Counterland	🟡	Same as above.
Airspace	Strategic Attack	🟡	Range access is challenging due to sharing between 3 US squadrons and the ROKAF. With outside units also requesting access, range availability is even less. Planning and scheduling range time is always an concern. The range normally assigns 30–45 minute blocks to units, and if the unit encounters any delays they are unable to use the airspace. Multiple range studies have been, but has not solved the congestion problems. Range Fires are also an issue. There is extensive vegetation on the range, and even inert ordnance causes multiple range fires throughout the dry season. Keeping the vegetation maintained has been the best method of mitigation, as well as restricting ordnance and targets depending on the frequency of range fires.
	Counterair	🟡	Same as above.
	Counterland	🟡	Same as above.
Targets	Counterland	🟡	Existing strafe rags are old and require replacement. Funding is also needed to replace backup radio parts and have funds on hand for WISS maintenance. This will be included in the FY2014 unfunded requirement submission.
Threats	Strategic Attack	🟡	Current threat systems tend to overheat past 30 minutes of operation. One or more threats are usually on some form of maintenance and have to be carefully managed to make sure there is at least one emitter on hand for training purposes. The range plans to engage with ROKAF (who own the systems) to assist in longevity of the emitters by tailoring emitter requests to targeted times and specific emitters.
	Counterland	🟡	Same as above.
Scoring & Feedback System	Counterland	🟡	Frequency interference is preventing one of the range's scoring cameras from properly transmitting video. Frequency managers have been unable to identify the source of the problem. No funds are available for backup parts. For the time being, the range has built a shielding system using sheet metal to shield the receiver portion of the scoring system, which has made it marginally usable (one of the target areas is barely visible).
	Electronic Combat Support	🔴	The availability of the emitters has improved drastically; however, the standards of training shot and kill procedures are still a work in progress. Remedy is to pursue written procedures and standards agreed upon between USAF and ROKAF.
Infrastructure	Counterland	🔴	Existing strafe rags are old and require replacement. Funding is also needed to replace backup radio parts and have funds on hand for WISS maintenance. This will be included in the FY2014 unfunded requirement submission.
Range Support	Counterland	🔴	Red for the lack of funds provided. Funding was originally reduced in anticipation that range management was going to be handed over to ROKAF. transfer was originally planned in 2005, but has not yet occurred. Awaiting further steps from the ROKAF to actively transfer control of the range to their side.
Suite of Ranges	Strategic Attack	🟡	Pilsung and Jik-do are the two only available ranges on a normal scheduled basis. When they are available, numerous factors such as weather, high terrain, fire codes, scoring limitations, and radio issues can constrain training. Some factors (i.e., scoring and radios) are can be controlled by the range, but require adequate funding to maintain the assets.
	Counterland	🟡	Same as above.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)
Pilsung Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Munitions Restrictions	Strategic Attack	🟡	PGMs are severely restricted due to the footprint issues with overland ranges and the close proximities of manned locations. Inertially Aided Munitions (IAM), Hellfire, and Maverick cannot be employed at this range. No planned action in place, Jik-do is the alternative location to execute drops for PGM.
	Counterland	🟡	Same as above.
	Air Drop	🔴	The range recently received a request to support Air Drop, but does not currently have the necessary procedures or footprints to safely conduct this type of activity. The range is currently coordinating and evaluating options to support this mission set.
	Special Operations	🟡	For same reasons as Strategic Attack, JTACs can't get all of the realistic PGM training for situations they can expect to encounter in combat. Limited to mostly conventional dive bomb attacks or low altitude LGBs.
Spectrum	Strategic Attack	🟡	The range experiences extensive radio line-of-sight issues as well as scoring issues with frequency interference. This affects the ability to get on range and obtain scores. Additional funding is needed to fix backup radios and conduct maintenance on WISS scoring system.
	Counterland	🟡	Same as Strategic Attack.
Airspace	Strategic Attack	🟡	Range access is challenging due to sharing between 3 U.S. squadrons and the ROKAF. With outside units also requesting access, range availability is even less. Planning and scheduling range time is always an concern. The range normally assigns 30–45 minute blocks to units, and if the unit encounters any delays they are unable to use the airspace. Multiple range studies have been, but has not solved the congestion problems. Range fires are also an issue. There is extensive vegetation on the range, and even inert ordnance causes multiple range fires throughout the dry season. Keeping the vegetation maintained has been the best method of mitigation, as well as restricting ordnance and targets depending on the frequency of range fires.
	Counterland	🟡	Same as Strategic Attack.
Noise Restrictions	Counterland	🟡	Noise sensitivity related to range operations has increased over the past year. This has led to restricting attack types and ordnance based on the time of day or night. Advisories that contain quiet hours are being actively sent to the RCOs in order to help increase their situational awareness on noise sensitive hours.

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Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Poinsett Assessment Details

Range Mission Description

The mission of Poinsett Range is to provide realistic electronic combat (EC) and bombing and gunnery (B&G) training for the 20 FW, USAF and DoD aircrews.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strategic Attack	●	●			●	●	●	●	●	●	●	●	●
Counterair	●	●			●	●	●	●	●	●	●	●	●
Counterspace													
Counterland	●	●			●	●	●	●	●	●	●	●	●
Countersea													
Information Operations	●	●			●	●	●	●	●	●	●	●	●
Electronic Combat Support	●	●			●	●	●	●	●	●	●	●	●
Command and Control	●	●			●	●	●	●	●	●	●	●	●
Air Drop													
Air Refueling	●	●			●	●	●	●	●	●	●	●	●
Spacelift													
Special Operations	●	●			●	●	●	●	●	●	●	●	●
Intelligence, Surveillance, and Reconnaissance	●	●			●	●	●	●	●	●	●	●	●

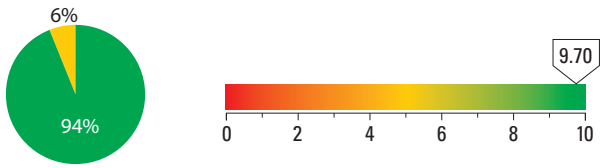
Legend: FMC ● PMC ● NMC ●

Encroachment Data

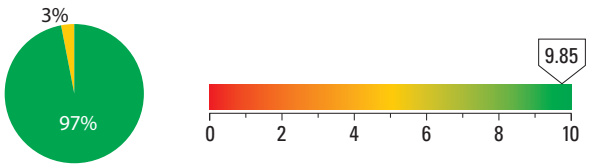
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strategic Attack	●	●	●		●	●	●	●	●	●	●	●
Counterair	●	●	●		●	●	●	●	●	●	●	●
Counterspace												
Counterland	●	●	●		●	●	●	●	●	●	●	●
Countersea												
Information Operations	●	●	●		●	●	●	●	●	●	●	●
Electronic Combat Support	●	●	●		●	●	●	●	●	●	●	●
Command and Control	●	●	●		●	●	●	●	●	●	●	●
Air Drop												
Air Refueling	●	●	●		●	●	●	●	●	●	●	●
Spacelift												
Special Operations	●	●	●		●	●	●	●	●	●	●	●
Intelligence, Surveillance, and Reconnaissance	●	●	●		●	●	●	●	●	●	●	●

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Poinsett Assessment Details

Summary Observations	Summary Observations
Gamecock D airspace is geographically too small to do any opposed training. The best SEAD airspace is W177/161 (over water), but this area contains no actual threat emitters. The airspace is usable for SEAD as the F-16 can create a training simulation, however there is no ability to be targeted from simulated threats to allow for threat reactions. Bulldog airspace has a high altitude shelf that does not allow for descent in case of weather or to positively identify threat emitters, limiting utility for DEAD training. The elimination of this shelf along with the recent addition of two threat emitters in the all altitude portion of Bulldog airspace would eliminate this problem. The quantity and variety of double digit systems/simulators assigned to Poinsett is insufficient. Accurate and timely SEAD debriefing products are needed to debrief pilots after SEAD and DEAD training missions with actual emitter "truth" data.	RF spectrum issues currently have minor impacts to range operations. Future selloffs of certain frequency bands could reduce the training capabilities of the range. The W177B & 161B airspace is routinely restricted to less than its published altitude of 30,000 ft leaving significantly less airspace for high altitude tactics.

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	10.00	10.00	9.81	9.77	9.77	**Encroachment Scores**	10.00	10.00	9.92	9.92	9.92
There is no proposed action to allow fighters to execute defensive threat reactions within the Poinsett Transition Area, nor release weapons inside R-6002 due to a Letter of Agreement between Jacksonville Center and Shaw AFB. There has been an initial site search conducted for possible fixed and mobile emitter sites along the South Carolina coast under the newly charted Built ATCAA. The possibility of periodically using mobile emitters is initially more feasible than developing fixed sites and could be done in the near future once permissions are granted from the various federal, state and local agencies that manage the locations. Site searches as well as meetings with location managers will continue later in FY2014. There is no proposed action to eliminate the high altitude shelf in the Bulldog MOA. There has been the recent addition of two more threat emitters in the all altitude portion of Bulldog airspace, which has reduced the threat emitter positive identification problem. Double digit threat simulator acquisition programs are underway, but no systems are in production at this time. Shaw is working on a standalone product to extract actual emitter "truth" data for SEAD/DEAD training mission debriefings. Effectiveness of product is unknown at this time.						USAF spectrum managers are currently monitoring spectrum issues and working with other agencies such as FAA and FCC to reduce the impact to training. There is no planned action/capability to prevent ATC from capping the airspace.					

Poinsett Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Airspace	Strategic Attack	●	Gamecock D airspace is geographically too small to do any opposed training; however, the airspace does contain a sufficient quantity of threat emitters to conduct SEAD training. DEAD training is limited in Gamecock, with only one emitter site directly under the airspace. Gamecock is usable airspace as long as the Poinsett Transition Area (PTA) is active, but the PTA is restrictive with respect to maneuvers within the PTA and the lack of ability for fighters to release ordinance on R-6002 and return to Gamecock D. There is no proposed action to allow fighters to defensively threat react within the neither PTA nor release weapons inside R-6002 due to a Letter of Agreement between Jacksonville Center and Shaw AFB.
	Counterair	●	Same as above.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)
Poinsett Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Threats	Strategic Attack	●	The best SEAD airspace is W177/161, which is over water but contains no actual threat emitters. The airspace is usable for SEAD with the ability of the F-16 to create a training simulation, however there is no ability to be targeted from simulated threats to allow for threat reactions. There has been an initial site search conducted for possible fixed and mobile emitter sites along the South Carolina coast under the newly charted Built ATCAA. The possibility of periodically using mobile emitters is initially more feasible than developing fixed sites, and could be done in the near future once permissions are given from the various federal, state and local agencies that manage the locations. The next best airspace for SEAD training is the Bulldog MOA. Overland it has a high altitude shelf that does not allow for descent in the case of weather or to positively identify threat emitters, limiting utility for DEAD training. The elimination of this shelf along with the recent addition of two more threat emitter sites under the all altitude portion of Bulldog airspace would eliminate this problem, but there currently is no proposed action to eliminate the shelf.
	Counterair	●	Same as above.
	Electronic Combat Support	●	The quantity and variety of double digit systems/simulators assigned to Poinsett is insufficient. Of the fourteen systems currently assigned, only one can accurately produce any double digit SAM simulations (two signals). Next generation threat simulators or real systems are needed.
Scoring & Feedback System	Electronic Combat Support	●	The system to collect EC mission data from the Poinsett threat emitter systems is almost complete. ACC/A3AR has provided funds and support for collecting fixed and mobile emitter data through an EW Multiplexer at the Poinsett Range and feeding the data to an EW Server located in the Shaw AFB War Room. ECD for the instrumentation and integration of all emitters with the War Room is June 14. The intent is to accurately debrief pilots after SEAD and DEAD training missions with actual emitter "truth" data. At this point, radiation times, SAM shot engagement times, and SAM operator actions are not combined into a useful product to conduct a SEAD debrief. The time it takes to extract this data off of the EW server is too long to facilitate a valid debrief timeline. The 20 FW is currently working on a standalone product that would help extract this data. The effectiveness of this product has not been determined at this time.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Spectrum	Electronic Combat Support	●	The range has reported the loss of a few training radar frequencies used at the range within the last several years, limiting a small portion of training capabilities. The current percentage of granted frequency clearance requests is 97%. The range currently has permission for most MUTES frequencies on Poinsett. The range also has all Mini-MUTES frequencies for any variant to be deployed at any of the fixed locations under Bulldog and Gamecock MOAs in order to change emitter types and fulfill their full training potential. Cellular networks operating in the 800 MHz range currently have the most impact; however, other frequency bands are quickly being claimed, which could impact the future availability of spectrum for range Electronic Warfare training missions.
Airspace	Strategic Attack	●	W177B & 161B airspace is given less than 50% of the time up to the normal altitude of 30,000 ft, leaving significantly less airspace for high altitude tactics. Additionally, ATC calls back W161A/B South about 50% of the time, which severely limits intercept range. There is no planned action/capability to prevent ATC from capping the airspace.
	Counterair	●	Same as above.

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Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Polygone Assessment Details

Range Mission Description

Polygone provides EW training for NATO, sponsored by a tri-lateral agreement with Germany, France and the US.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strategic Attack													
Counterair	PMC	PMC			PMC	PMC	PMC	FMC	PMC				
Counterspace													
Counterland													
Countersea													
Information Operations													
Electronic Combat Support	PMC	PMC			PMC	PMC	PMC	FMC	PMC				
Command and Control													
Air Drop													
Air Refueling													
Spacelift													
Special Operations													
Intelligence, Surveillance, and Reconnaissance													

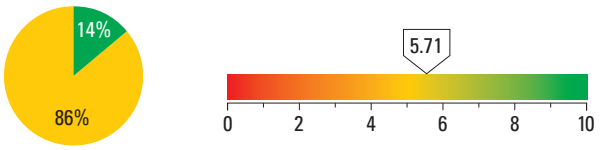
Legend: FMC PMC NMC

Encroachment Data

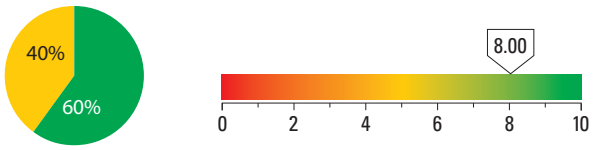
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strategic Attack												
Counterair	Minimal	Moderate	Moderate		Moderate		Minimal	Moderate	Minimal	Minimal	Minimal	Minimal
Counterspace												
Counterland												
Countersea												
Information Operations												
Electronic Combat Support	Minimal	Moderate	Moderate		Moderate		Minimal	Moderate	Minimal	Minimal	Minimal	Minimal
Command and Control												
Air Drop												
Air Refueling												
Spacelift												
Special Operations												
Intelligence, Surveillance, and Reconnaissance												

Legend: Minimal Moderate Severe

Capability Chart and Scores



Encroachment Chart and Scores



Polygone Assessment Details

Summary Observations	Summary Observations
The largest capability issue is updating the SAM systems--this requires funding to purchase systems, land to place them WRT the airspace above, and frequency approval to operate them. All mission areas are equally impacted by these issues.	Largest encroachment issue is frequency spectrum; the use of radio and radar threat simulators is becoming more time-constrained for authorization, with reduced operating areas. The next largest issue is the increase of surrounding civilian airways and lack of dedicated Military Operating Area for aircrew training against surface threats IAW realistic TTP's. All mission areas are equally impacted by the frequency authorization issues and the airspace limitations.

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	4.38	4.38	N/A	7.62	7.62	**Encroachment Scores**	5.27	5.27	N/A	8.50	8.50
Expect future projects to remain constant or decline until we are able to acquire new SAM systems (including double-digit SAMs) and operate them in locations relevant to the airspace above our systems.						Further limitations in the areas where Polygone can operate EW threat simulators throughout Europe and increased cost for deployments to areas with appropriate airspace will continue to negatively effect training. To ensure adequate EW training in the future, Polygone will need to have the opportunity to aquire land and EW spectrum to operate legacy and advanced (double-digit) SAMs that are placed logically within the airspace NATO forces can operate.					

Polygone Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Counterair	🟡	Current land is not ideal for the flying training area (TRA 205). As CBA 22 becomes an approved airspace, land should be acquired to better support EW training. Early planning and budgeting is essential to ensure proper land location, costs and EW spectrum are compatible.
	Electronic Combat Support	🟡	Same as above.
Airspace	Counterair	🟡	There are extensive scheduling issues attributed to high demand and profound weather impacts. The availability of training is consequently limited. No corrective actions are currently planned to address the issues, and as CBA 22 becomes an approved airspace this problem will grow.
	Electronic Combat Support	🟡	Same as above.
Targets	Counterair	🟡	Not all current SAM targets provide all associated beams. EW spectrum issues make obtaining new systems that will be allowed to operate difficult. Some SAMs are actually simulated and therefore do not provide accurate Targeting Pod targeting of the system (known issue of simulators, but inflatables are available to place by the system to provide something to target).
	Electronic Combat Support	🟡	Same as above.
Threats	Counterair	🟡	Current threat simulators are outdated, aging, and approaching irrelevance. Working to improve ability to control the SAMs and simulate an Integrated Air Defense system, but SAM locations and systems need updating along with approval to operate in new locations. EW training is limited to single-digit SAM simulation in an autonomous acquisition scenario. Polygone has no capability to provide training against the newer real-world (double-digit) threats and are in the infantry for integrated ADS scenarios. Current capability is sufficient for 80% of the customer training requirements. Improvements are only possible at the current rate of next generation EW simulator production. The range would like to acquire double-digit capability (XMS-11 or similar), but availability and funding are current constraints.
	Electronic Combat Support	🟡	Same as above
Scoring & Feedback System	Counterair	🟡	Current feedback for EW range events is archaic - a text line sent via email. Near real-time feedback does not exist. Installation of the new P5 CTS in USAFE in the future will enhance this integration but necessitates integration of emitter data at a higher fidelity than currently available for analysis during debrief. Aircrew EW training will suffer if range results cannot be integrated. Installation of the P5 RUU and EW server has been delayed. The plan is to leverage the CTS backbone to provide the means of integrating threat data. The range will require the engineering of a solution for getting digitized system data from threats/simulators back to the PCC for real-time feedback integration. Some of this equipment is being revised/updated, but much work is still needed.
	Electronic Combat Support	🟡	Same as above.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)
Polygone Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Range Support	Counterair		Communication network/engineering support is not resident at Polygone. The O&M contractor does not have an engineering flight. As a geographically separated unit (GSU), Polygone must rely on HHQ communications/ engineering support for design and installation of needed upgrades/enhancements. Expertise/familiarity with PCC operations by supporting CE/COMM is nonexistent. Status as a GSU leads to limited or no support from Ramstein. Under the WPC, support has improved however we anticipate further increases in needed support. Installation of the new P5 CTS in USAFE over the next year, will necessitate integration of emitter data for analysis during debrief. The plan is to leverage the CTS backbone to provide the means of integrating threat data. Polygone will need to engineer a solution for getting digitized system data from threats/simulators back to the PCC. Without this solution in-place, Polygone will not be capable of fully exploiting any DMO/live and synthetic initiative for integration of Polygone range data. Aircrew EW training will be suffer if range results cannot be integrated. With the inclusion of Polygone in the P5 CTS upgrade, plan to leverage engineering/comm expertise to establish a working group dedicated to solving the feedback problem and follow on live and synthetic capability by linking up with the DMO portal located at the WPC.
	Electronic Combat Support		Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Munitions Restrictions	Counterair		Use of chaff/flares and Combat Electonic Attack is restricted in Germany, which leads to negative aircrew training (inability to train as they would fight). No planned action -- USAF does not "own" any airspace and must abide by host nation restrictions.
	Electronic Combat Support		Same as above.
Spectrum	Counterair		Authorizations for required frequency bands are, at times, not attainable in several European countries. Currently unable to support certain customer requests for EW threat training; affects training capability < 10% of the time. Spectrum management is becoming more restrictive as commercial spectrum requirements increase, with no fix in sight. This will also limit ability to acquire new advanced (Double-digit) SAM systems/simulators.
	Electronic Combat Support		Same as above.
Airspace	Counterair		Problematic weather and high demand for range use cause scheduling challenges. Training availability is negatively impacted Corrective actions are not currently planned to address the issue.
	Electronic Combat Support		Extensive scheduling issues attributed to high demand and profound weather impacts. The availability of training is consequently limited. Corrective actions are not planned to address the issues.
Adjacent Land Use	Counterair		Current land is not ideal for the flying training area (TRA 205). As CBA 22 becomes an approved airspace, land should be acquired to better support EW training. Early planning and budgeting is essential to ensure proper land location, costs and EW spectrum are compatable.
	Electronic Combat Support		Same as above.

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Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Razorback Assessment Details

Range Mission Description

Razorback provides a quality, realistic, tactical range environment for A-G, forward air control and airdrop training to ensure the combat readiness of flying units throughout the southern and southwestern region. Primary users include 188 FW and 17th FW.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strategic Attack	●	●			●	●	●	●	●			●	●
Counterair	●	●			●	●	●	●	●			●	●
Counterspace													
Counterland	●	●			●	●	●	●	●	●	●	●	●
Countersea													
Information Operations	●	●				●		●	●				●
Electronic Combat Support	●	●			●	●	●	●	●				●
Command and Control	●	●			●	●		●	●				●
Air Drop	●	●			●	●	●	●	●		●	●	●
Air Refueling		●				●							
Spacelift													
Special Operations	●	●			●	●	●	●	●	●	●	●	●
Intelligence, Surveillance, and Reconnaissance	●	●			●	●	●	●	●		●	●	●

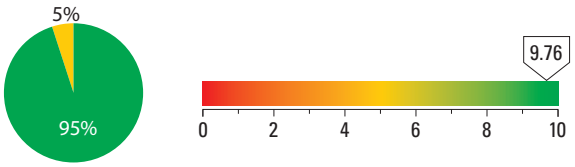
Legend: FMC ● PMC ● NMC ●

Encroachment Data

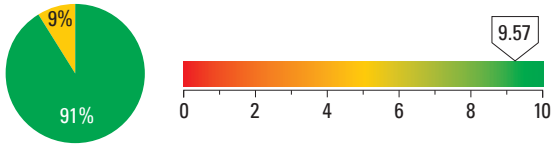
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strategic Attack	●	●	●		●	●	●	●	●	●	●	●
Counterair	●	●	●		●	●	●	●	●	●	●	●
Counterspace												
Counterland	●	●	●		●	●	●	●	●	●	●	●
Countersea												
Information Operations	●	●	●						●		●	●
Electronic Combat Support	●	●	●		●		●	●	●	●	●	●
Command and Control	●	●	●		●		●	●	●	●	●	●
Air Drop	●	●	●		●	●	●	●	●	●	●	●
Air Refueling												
Spacelift												
Special Operations	●	●	●		●	●	●	●	●	●	●	●
Intelligence, Surveillance, and Reconnaissance	●	●	●		●	●	●	●	●	●	●	●

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

No comments.

Summary Observations

No comments.

Historical Information, Results, and Future Projections

Calendar Year	2008	2009	2010	2011	2012
Capability Scores	9.88	9.88	9.52	9.52	9.52

No comments.

Historical Information, Results, and Future Projections

Calendar Year	2008	2009	2010	2011	2012
Encroachment Scores	9.78	9.78	9.73	9.73	9.73

No comments.

Razorback Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Counterland	●	The small landspace restricts allowable precision guided weapon deliveries.
Airspace	Air Refueling	●	The airspace is too small for air refueling operations; adjoining MOA is used for air refueling. There is no planned remedy.
Threats	Electronic Combat Support	●	The current threat simulator, AN/UPQ-8(V), has limited range and cueing capabilities. Awaiting fielding of ANG system to replace.
Range Support	Counterland	●	Range support is limited by manpower and O&M funding. The range cannot support 2-shift operations. An additional RCO has been requested. A range manpower study is underway to identify shortfalls and provide remedies.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Munitions Restrictions	Strategic Attack	●	Live munitions are not allowed due to host unit regulations. As a result, users are unable to fulfill "live" weapons training requirements at this range. There is no anticipated remedy.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Special Operations	●	Same as above.
Adjacent Land Use	Strategic Attack	●	Army SDZs from adjacent small arms ranges frequently limit minimum altitude deliveries or prevent mission entirely. Two hours of checkfire are guaranteed daily to allow customers unrestricted access; however, outside of this checkfire users must abide by min altitudes from adjacent ranges. There is no anticipated remedy.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Special Operations	●	Same as above.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Shelby Assessment Details

Range Mission Description

Shelby Range is a Class A Primary Training Range for Basic Surface Attack (BSA), Close Air Support (CAS), and Electronic Warfare (EW) for the 187th FW Montgomery AL, 238th ASOS Meridian MS, and multiple CRTC deployed units. The range serves as the primary drop zone and assault landing zone for 172nd AW Jackson, MS, 815th AW Keesler AFB, and CRTC deployed AMC units. The range supports USAF 40th FTS and 85th TES located at Eglin AFB conducting BSA and CAS training; supports aerial gunnery training for the 4th and 19th SOS, Hurlburt AFB, FL; supports the 153rd ARS Meridian MS for Intelligence, and Surveillance and Reconnaissance (ISR) Training; supports multiple MS Army National Guard aviation units for door gunnery training; and supports two Large Force Exercises annually (Magnolia Warrior MS for Air National Guard and Emerald Warrior for AFSOC).

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strategic Attack	●	●			●	●	●	●	●	●	●	●	●
Counterair	●	●			●	●	●	●	●	●	●	●	●
Counterspace													
Counterland	●	●			●	●	●	●	●	●	●	●	●
Countersea													
Information Operations	●	●			●	●	●	●	●	●	●	●	●
Electronic Combat Support	●	●			●	●	●	●	●	●	●	●	●
Command and Control	●	●			●	●	●	●	●	●	●	●	●
Air Drop	●	●			●	●	●	●	●	●	●	●	●
Air Refueling													
Spacelift													
Special Operations	●	●			●	●	●	●	●	●	●	●	●
Intelligence, Surveillance, and Reconnaissance	●	●			●	●	●	●	●	●	●	●	●

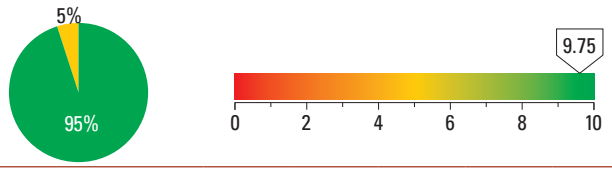
Legend: FMC ● PMC ● NMC ●

Encroachment Data

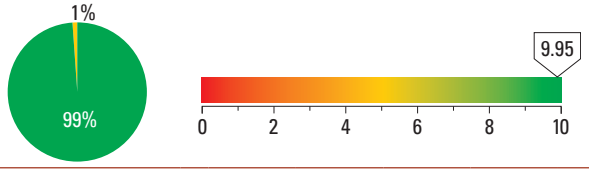
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strategic Attack	●	●	●		●	●	●	●	●	●	●	●
Counterair	●	●	●		●	●	●	●	●	●	●	●
Counterspace												
Counterland	●	●	●		●	●	●	●	●	●	●	●
Countersea												
Information Operations	●	●	●		●	●	●	●	●	●	●	●
Electronic Combat Support	●	●	●		●	●	●	●	●	●	●	●
Command and Control	●	●	●		●	●	●	●	●	●	●	●
Air Drop	●	●	●		●	●	●	●	●	●	●	●
Air Refueling	●	●	●		●	●	●	●	●	●	●	●
Spacelift												
Special Operations	●	●	●		●	●	●	●	●	●	●	●
Intelligence, Surveillance, and Reconnaissance	●	●	●		●	●	●	●	●	●	●	●

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Shelby Assessment Details

Summary Observations						Summary Observations					
No comments.						No comments.					
Historical Information, Results, and Future Projections						**Historical Information, Results, and Future Projections**					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	9.88	9.88	9.90	9.75	9.75	**Encroachment Scores**	8.90	8.90	9.80	9.95	9.95
No comments.						No comments.					

Shelby Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Airspace	Strategic Attack		There is inadequate airspace volume, both vertically and horizontally. This limits the number of aircraft and types of maneuvers allowed. An airspace proposal is in the works to increase vertical airspace in Desoto MOA I and II.
	Counterair		Same as above.
Range Support	Strategic Attack		There are limited authorized manpower levels. This limits the amount of operations that can take place, and limits the amount and type of target area maintenance and improvement that can be conducted. An upcoming manpower study (date TBD) may alleviate this issue.
	Electronic Combat Support		There are limited authorized manpower levels. This limits the amount of operations that can take place. Electronic AFSC personnel are currently stretched thin, and the addition of new EW threats will place an even larger workload on these troops. An upcoming manpower study (date TBD) may alleviate this issue.
	Special Operations		Same as above.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Spectrum	Strategic Attack		The proximity to Eglin and Tyndall training areas causes overlap in frequency assignments. Threat Emitter frequency authorizations are limited and subject to a lengthy approval process. This limits SADL operations, and results in occasional A-G and A-A frequency overlaps. SADL use must be coordinated with the Joint Gulf Spectrum Manager prior to use, with limited frequencies and power settings. Radio frequency overlaps are coordinated with the NGB Spectrum Manager for frequency reassignment.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Smoky Hill Assessment Details

Range Mission Description

Major missions at Smoky Hill include 4 ANG flying units (131BW, 114FW, 138FW & 139AW), 3 Reserve AF flying units (303FS, 343BS & 93BS) and 14 Active Duty AF flying units (49TES, 11BS, 20BS, 96BS, 340WS, 23BS, 69BS, 9BS, 337BS, 28BS, 37BS, 34BS, 509BW & 48AS), Smoky Hill supports daily A-G sorties and electronic combat training. ASOS, STS and other service's Special Operations units train monthly, if not weekly. 284th ASOS (tenant unit; Kansas ANG) and 10th ASOS (Active Duty) are frequent users. Smoky Hill supports a variety of Kansas Army guard units including PTAE and 108th Aviation units (door gunnery). The range also provides training for Ft Riley aviation units (OH-58D, AH-64, UH-47 and HH-60) and various ground training for infantry. The range hosts SOCOM's JADED THUNDER Exercise bi-annually as well as Air Force Global Strike Command's Global Strike Challenge Bomber Competition. Lastly, the range supports the Canadian JTAC training which includes CF-18, Alpha Jet and Griffon A-G attack. Additional coalition JTAC/Special Operations training includes German, Japanese and British forces.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strategic Attack	●	●			●	●	●	●	●		●	●	●
Counterair	●	●			●	●	●	●	●		●	●	●
Counterspace													
Counterland	●	●			●	●	●	●	●		●	●	●
Countersea													
Information Operations													
Electronic Combat Support	●	●					●						
Command and Control		●						●	●				●
Air Drop	●	●			●	●	●	●	●		●	●	●
Air Refueling		●				●			●				
Spacelift													
Special Operations	●	●			●	●		●	●	●	●	●	●
Intelligence, Surveillance, and Reconnaissance	●	●			●	●		●	●		●	●	●

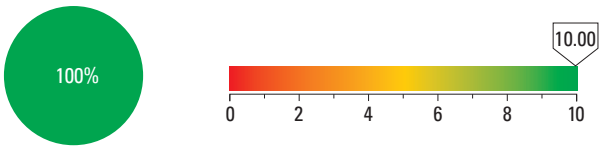
Legend: FMC ● PMC ● NMC ●

Encroachment Data

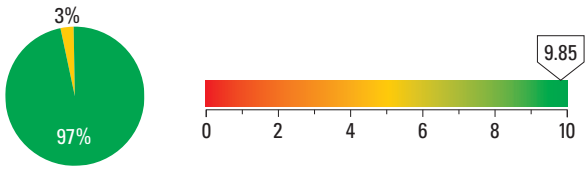
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strategic Attack	●	●	●		●	●	●	●	●	●	●	●
Counterair	●	●	●		●	●	●	●	●	●	●	●
Counterspace												
Counterland	●	●	●		●	●	●	●	●	●	●	●
Countersea												
Information Operations												
Electronic Combat Support	●	●	●		●	●	●	●	●	●	●	●
Command and Control	●	●	●		●	●	●	●	●	●	●	●
Air Drop	●	●	●		●	●	●	●	●	●	●	●
Air Refueling	●	●	●		●	●	●	●	●	●	●	●
Spacelift												
Special Operations	●	●	●		●	●	●	●	●	●	●	●
Intelligence, Surveillance, and Reconnaissance	●	●	●		●	●	●	●	●	●	●	●

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

No comments.

Summary Observations

The primary encroachment factor involves a recent change related to usage of airspace adjacent to Smoky Military Operating Area (MOA) for bomber activities. The range is currently working with Air Combat Command to develop a way forward for supporting bomber training requirements.

Smoky Hill Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	9.85	9.85	9.85	10.00	10.00	**Encroachment Scores**	10.00	10.00	10.00	10.00	10.00
No comments..						No comments.					

Smoky Hill Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
No comments.			

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Airspace	Strategic Attack		Currently the airspace immediately north and south of the Smoky Military Operating Area (MOA) is operated by Det 1/184 IW (Det 1) under a Letter of Agreement (LOA) with Kansas City Center (KCC). This airspace provides bombers room to maneuver while using the Smoky Hill Air National Guard Range. Recently KCC has identified concerns with this airspace, and has indicated that it should no longer be operated under the LOA. The National Guard Bureau has determined that Det 1 does not have the justification to move forward with an airspace action to modify/expand the existing MOA. Det 1 has requested Air Combat Command take the lead and be the proponent on an airspace modification to fulfill Active Duty bomber requirements (bombers are the primary users of the current LOA airspace). The timeline is currently unknown.
	Counterland		Same as above.
	Intelligence, Surveillance and Reconnaissance		Same as above.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Tori Shima Assessment Details

Range Mission Description

Tori Shima is a live A/G bombing range that supports low and medium-altitude air-to-ground weapons employment. Typical missions include [day and night] bombing (all conventional munitions up to 2,000 lbs including JDAM & LGB), strafe, rockets, door gunnery, hellfire/TOW, air interdiction, and CAS. Typical range users are F/A-18C/D from MAG-12; UH/AH-1, CH-53 and CH-46 from the 1st MAW, HH-60 & F-15C from the 18 WG, and F-18C/E/F from CVW-5.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strategic Attack	PMC	NMC	FMC		NMC	NMC	NMC	NMC	FMC			NMC	PMC
Counterair													
Counterspace													
Counterland	PMC	NMC	FMC		NMC	NMC	NMC	NMC	FMC			NMC	PMC
Countersea													
Information Operations													
Electronic Combat Support	NMC					NMC	NMC						
Command and Control													
Air Drop													
Air Refueling													
Spacelift													
Special Operations													
Intelligence, Surveillance, and Reconnaissance													

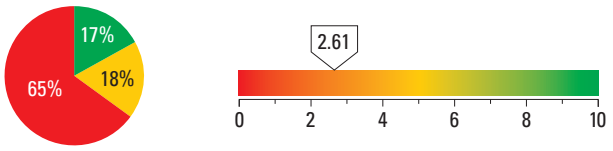
Legend: FMC, PMC, NMC

Encroachment Data

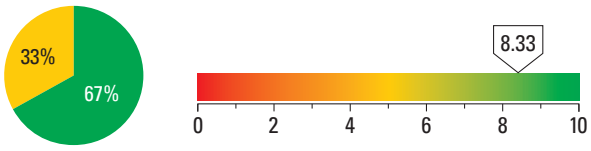
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strategic Attack		Minimal		Minimal	Moderate		Minimal		Minimal			Moderate
Counterair												
Counterspace												
Counterland		Minimal		Minimal	Moderate		Minimal		Minimal			Moderate
Countersea												
Information Operations												
Electronic Combat Support												
Command and Control												
Air Drop												
Air Refueling												
Spacelift												
Special Operations												
Intelligence, Surveillance, and Reconnaissance												

Legend: Minimal, Moderate, Severe

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

Despite being used very often for live bombing, Tori Shima marginally meets training requirements for range users (there is a very small land area for targeting, and no ability to lay out tactical targets or scoring equipment). Encroachment is rare, and consists solely of fishing boat traffic trespassing inside of the lateral confines of the range. There is still an ongoing effort by the local government to return the range back to Japan.

Summary Observations

Despite being used very often for live bombing, Tori Shima marginally meets training requirements for range users (there is a very small land area for targeting, and no ability to lay out tactical targets or scoring equipment). Encroachment is rare, and consists solely of fishing boat traffic trespassing inside of the lateral confines of the range. There is still an ongoing effort by the local government to return the range back to Japan.

Tori Shima Assessment Details

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	2.00	2.00	4.09	4.09	2.61	**Encroachment Scores**	7.50	7.50	7.50	7.50	8.33
Boat encroachment is rare in Tori Shima, thanks to efforts of the Okinawa Defense Bureau (ODB). The range is a series of islands of rock and sand with varying land area based on tidal conditions.						Boat encroachments are rare in Torishima, thanks to efforts of the Okinawa Defense Bureau (ODB). The range is a series of islands of rock and sand with varying land area based on tidal conditions.					

Tori Shima Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strategic Attack	🟡	Land size is very small; therefore, aircrew have little to no targets of tactical significance. There is no feasible action to remedy this situation.
	Counterland	🟡	Same as above.
	Electronic Combat Support	🔴	There is no way to put EW emitters on the range due to the small land area and lack of power sources. This precludes electronic warfare training for aircrew. There is no feasible action to remedy this situation.
Airspace	Strategic Attack	🔴	The airspace associated with Tori Shima is extremely small for modern standards. Aircraft are severely limited in attack profiles and weapon employment. No planned remedy; the airspace is defined by binational agreements from 1972, which are unlikely to change.
	Counterland	🔴	Same as above.
Targets	Strategic Attack	🔴	The small land area, tidal conditions, relative remoteness, rough terrain, UXO danger, and typhoon-prone area prevent permanent equipment/targets from being installed. As a result, range users have nothing of tactical significance to target. There is no practical solution for this problem.
	Counterland	🔴	Same as above.
Threats	Strategic Attack	🔴	Same as above.
	Counterland	🔴	Same as above.
	Electronic Combat Support	🔴	Same as above.
Scoring & Feedback System	Strategic Attack	🔴	The small land area, tidal conditions, relative remoteness, rough terrain, UXO danger, and typhoon-prone area prevent permanent equipment/targets from being installed. As a result, range users have nothing of tactical significance to target. In addition, there are no power sources available to operate scoring and feedback systems such as cameras, range-finders, and hit detectors. There is no practical solution for these problems. In addition, no power sources are available to operate cameras, range-finders, and hit detectors.
	Counterland	🔴	Same as above.
	Electronic Combat Support	🔴	Same as above.
Infrastructure	Strategic Attack	🔴	There is no existing infrastructure, and it is not practical or supportable to remedy this. See comments in Targets, Threats, and Scoring/Feedback sections.
	Counterland	🔴	Same as above.
MOUT Facilities	Strategic Attack	🔴	There are no MOUT capabilities, nor is it practical or supportable to remedy this.
	Counterland	🔴	Same as above.
Suite of Ranges	Strategic Attack	🟡	Same as comments in other sections of this assessment. The range minimally supports current AF users, but does not fully support sister service needs in region nor next generation aircraft requirement, primarily due to range land size and airspace size.
	Counterland	🟡	Same as above.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)
Tori Shima Detailed Comments (continued)

Encroachment Observations

Factors	Assigned Training Mission	Score	Comments
Airspace	Strategic Attack	●	The airspace associated with Tori Shima is extremely small for modern standards. Aircraft are severely limited in attack profiles and weapon employment. No planned remedy; the airspace is defined by binational agreements from 1972, which are unlikely to change.
	Counterland	●	Same as above.
Range Transients	Strategic Attack	●	Though rare, the greatest issue with the range is transient boat traffic preventing ordnance use. Since this is a Class C remote island range, it is nearly impossible to police the area to keep boats out. Users are required to cease fire if a boat enters the 3 NM impact area. The range mitigates this risk by putting out notices to mariners to remain clear of the area, by working with ODB, and by booking a backup range (Idesuna Jima, W-174) in case Tori Shima cannot be fired on (so users can quickly switch without significant training loss). Note: in cases where the range is being used as a simulated range only, boat traffic does not impede range use.
	Counterland	●	Same as above.

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Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Townsend Assessment Details

Range Mission Description

Townsend Range is a joint A/G range on USMC land operating in support of the Savannah Combat Readiness Training Center (CRTC).

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strategic Attack	●	●			●	●	●	●	●			●	
Counterair	●	●			●	●	●	●	●			●	
Counterspace													
Counterland	●	●			●	●	●	●	●			●	
Countersea													
Information Operations	●	●			●	●	●	●	●			●	
Electronic Combat Support	●	●			●	●	●	●	●			●	
Command and Control	●	●			●	●	●	●	●	●		●	
Air Drop													
Air Refueling	●	●				●		●	●				
Spacelift													
Special Operations	●	●			●	●	●	●	●			●	
Intelligence, Surveillance, and Reconnaissance	●	●			●	●	●	●	●			●	

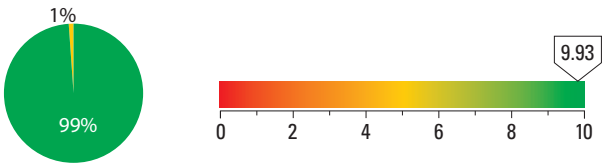
Legend: FMC ● PMC ● NMC ●

Encroachment Data

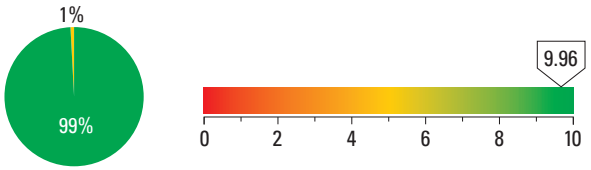
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strategic Attack	●	●	●	●	●	●	●	●	●	●	●	●
Counterair	●	●	●	●	●	●	●	●	●	●	●	●
Counterspace												
Counterland	●	●	●	●	●	●	●	●	●	●	●	●
Countersea	●	●	●	●	●	●	●	●	●	●	●	●
Information Operations	●	●	●	●	●	●	●	●	●	●	●	●
Electronic Combat Support	●	●	●	●	●	●	●	●	●	●	●	●
Command and Control	●	●	●	●	●	●	●	●	●	●	●	●
Air Drop	●	●	●	●	●	●	●	●	●	●	●	●
Air Refueling	●	●	●	●	●	●	●	●	●	●	●	●
Spacelift												
Special Operations	●	●	●		●	●	●	●	●	●	●	●
Intelligence, Surveillance, and Reconnaissance	●	●	●		●	●	●	●	●	●	●	●

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Summary Observations

No comments.

Summary Observations

No comments.

Historical Information, Results, and Future Projections

Calendar Year	2008	2009	2010	2011	2012
Capability Scores	9.85	9.85	9.72	9.72	9.72

ANG has implemented a capabilities sharing program for threat emitters by mobilizing its emitter capabilities for scheduled exercises and training rotations; Townsend hosts the JTE Threat Emitter. ANG Force Structure is projected to be relatively stable throughout the FYDP.

Historical Information, Results, and Future Projections

Calendar Year	2008	2009	2010	2011	2012
Encroachment Scores	9.72	9.72	9.55	9.55	9.55

No comments.

Townsend Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strategic Attack		The range is currently not big enough to facilitate WDZs for precision guided munitions. Users can currently employ laser guided bomb ordnance (i.e., LGTR), but parameters are so limited that it is considered negative training. The USMC is currently expanding the range from its current 5K acres to 34K acres and should be completed in FY2017.

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Munitions Restrictions	Strategic Attack		The range is currently not big enough to facilitate WDZs for precision guided munitions. Users can currently employ laser guided bomb ordnance (i.e., LGTR), but parameters are so limited that it is considered negative training. The USMC is currently expanding the range from its current 5K acres to 34K acres and should be completed in FY2017.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Utah Test and Training Range (UTTR) Assessment Details

Range Mission Description

The Utah Test and Training Range (UTTR) provides high desert terrain with mountains on the east and west sides of the range with a valley floor of about 5,000 feet MSL located in the western part of Utah and the eastern side of Nevada. Hill AFB-based units include 388 FW, 419 FW (AFRC), 514 FLTS, and 75 ABW. Dugway MRTFB (R6402) is located on the east side of the UTTR. The UTTR contains the largest overland weapons safety footprint available in the DoD for aircrew training and weapons testing.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strategic Attack													
Counterair	●	●			●	●	●	●	●	●	●	●	●
Counterspace													
Counterland	●	●			●	●	●	●	●	●	●	●	●
Countersea													
Information Operations													
Electronic Combat Support	●	●			●	●	●	●	●	●	●	●	●
Command and Control	●	●			●	●	●	●	●	●	●	●	●
Air Drop													
Air Refueling	●	●			●	●	●		●				
Spacelift													
Special Operations	●	●			●	●	●		●	●	●	●	●
Intelligence, Surveillance, and Reconnaissance	●	●			●	●	●		●	●	●	●	●

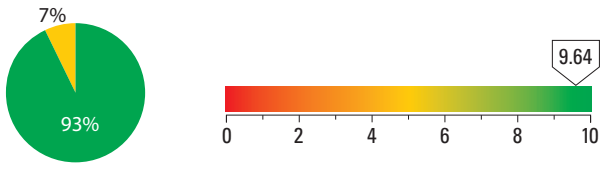
Legend: FMC ● PMC ● NMC ●

Encroachment Data

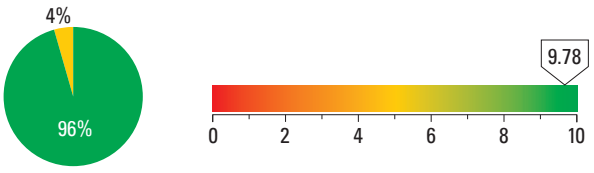
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strategic Attack												
Counterair	●	●	●		●	●	●	●	●	●		●
Counterspace												
Counterland	●	●	●		●	●	●	●	●	●	●	●
Countersea												
Information Operations												
Electronic Combat Support	●	●	●		●	●	●	●	●	●	●	●
Command and Control	●	●	●		●	●	●	●	●	●	●	●
Air Drop												
Air Refueling	●		●		●							
Spacelift												
Special Operations	●	●	●		●	●	●	●	●	●	●	●
Intelligence, Surveillance, and Reconnaissance	●	●	●		●	●	●	●	●	●	●	●

Legend: Minimal ● Moderate ● Severe ●

Capability Chart and Scores



Encroachment Chart and Scores



Utah Test and Training Range (UTTR) Assessment Details

Summary Observations	Summary Observations
The loss of the UTTR Mission Control Center (MCC) will bring UTTR Test & Evaluation (T&E) operations to a halt if not addressed. Aside from MCC issue, overall encroachment for the UTTR is minimal and the majority of these issues can be controlled through with the HRAIZ map and Central Scheduling Enterprise (CSE). UTTR encroachment is concentrated in two specific areas. The most significant encroachment is the pending loss of the MCC due to an 75 ABW project on Hill AFB. The second area of encroachment is a direct results of the Army expansion of Dugway Proving Ground (DPG) beyond operations as a Chem/Bio MRTFB into the realm of UAS. Primary encroachment areas involving Airspace and Spectrum are detailed below. Common range instrumentation, arms and munitions and targets and threats are most severely impacted. UTTR T&E operations will continue to incur further degradation if these encroachment issues are not resolved. UTTR is aggressively working to mitigate these areas. The MCC requires MILCON. The DPG issues can be primarily be solved through more cooperation and CSE. Airspace and Spectrum encroachment pertains to the 75 ABW lease agreement which will affect UTTR infrastructure at Hill AFB.	The loss of the UTTR Mission Control Center (MCC) will bring UTTR Test & Evaluation (T&E) operations to a halt if not addressed. Aside from MCC issue, overall encroachment for the UTTR is minimal and the majority of these issues can be controlled through with the HRAIZ map and Central Scheduling Enterprise (CSE). UTTR encroachment is concentrated in two specific areas. The most significant encroachment is the pending loss of the MCC due to an 75 ABW project on Hill AFB. The second area of encroachment is a direct results of the Army expansion of Dugway Proving Ground (DPG) beyond operations as a Chem/Bio MRTFB into the realm of UAS. Primary encroachment areas involving Airspace and Spectrum are detailed below. Common range instrumentation, arms and munitions and targets and threats are most severely impacted. UTTR T&E operations will continue to incur further degradation if these encroachment issues are not resolved. UTTR is aggressively working to mitigate these areas. The MCC requires MILCON. The DPG issues can be primarily be solved through more cooperation and CSE. Airspace and Spectrum encroachment pertains to the 75 ABW lease agreement which will affect UTTR infrastructure at Hill AFB.

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Capability Scores	9.89	9.89	9.89	9.55	9.55

Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012
Encroachment Scores	9.83	9.83	9.83	9.55	9.55

The loss of the UTTR Mission Control Center (MCC) will bring UTTR Test & Evaluation (T&E) operations to a halt if not addressed. Aside from MCC issue, overall encroachment for the UTTR is minimal and the majority of these issues can be controlled through with the HRAIZ map and Central Scheduling Enterprise (CSE). UTTR encroachment is concentrated in two specific areas. The most significant encroachment is the pending loss of the MCC due to an 75 ABW project on Hill AFB. The second area of encroachment is a direct results of the Army expansion of Dugway Proving Ground (DPG) beyond operations as a Chem/Bio MRTFB into the realm of UAS. Primary encroachment areas involving Airspace and Spectrum are detailed below. Common range instrumentation, arms and munitions and targets and threats are most severely impacted. UTTR T&E operations will continue to incur further degradation if these encroachment issues are not resolved. UTTR is aggressively working to mitigate these areas. The MCC requires MILCON. The DPG issues can be primarily be solved through more cooperation and CSE. Airspace and Spectrum encroachment pertains to the 75 ABW lease agreement which will affect UTTR infrastructure at Hill AFB.	New proposed Wind Turbine development in the SEVIER MOA, if built, will have severe negative impacts to large force exercises, the Weapons System Evaluation Program (WSEP), and the ability to track aircraft where the development will take place. Renewable energy encroachment has increased 30% in the last year and carries a significant manpower burden.

Utah Test and Training Range (UTTR) Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Airspace	Counterair	●	5th Generation aircraft with large weapon footprints require more air and landspace to meet their training requirements. The existing airspace limits realistic training. The range is working toward acquiring new ground space along with temporary restricted airspace; estimated completion date of 2016.
Targets	Counterland	●	5th Generation aircraft will require high fidelity targets. The range is working to acquire replacement targets; estimated completion date 2016–2017.
Threats	Electronic Combat Support	●	5th Generation aircraft will require high fidelity threat emitters to train in order to determine system capabilities and limitations.
Infrastructure	Command and Control	●	There is no Combined Air Operations Center (CAOC) or facilities to meet this item. Simulation or TDY will have to be used until new facilities can be built; estimated completion date 2017 or later.
Range Support	Command and Control	●	75 ABW land development will annex the UTTR facilities outside the base. New facilities have been programmed, but timeframe is 2017 or later.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)
Utah Test and Training Range (UTTR) Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Spectrum	Counterland		The DPG mission change to UAS activity and associated increase in usage of spectrum has caused scheduling impacts at the UTTR. CSE and the Integrated Frequency Deconfliction System (IFDS) should help manage requirements. Estimated completion date of 2015.
Adjacent Land Use	Electronic Combat Support		The 75 ABW Enhanced Use Lease (EUL) will annex the MCC and Air Operations Center off Hill AFB and cause security issues and facility use issues. This could have an impact command and control of the electronic threats, scoring systems and communications used to conduct missions on the UTTR. Estimated completion date 2017 or later.
	Command and Control		The 75 ABW EUL will annex the MCC and Air Operations Center off Hill AFB and cause security issues and facility use issues. This could have an impact on the command and control of all missions conducted on the UTTR. Estimated completion date 2017 or later.

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Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Warren Grove Assessment Details

Range Mission Description

Warren Grove Range (WGR) is a 9,416 acre Primary Training Range (PTR), located in central Southeastern New Jersey Pinelands Preserve. The range's mission is to deliver the most realistic, relevant and safe environment to train air and ground warfighters for victory in today and tomorrow's joint combat operations arena. The range supports federal, state, local, and first responder personnel for homeland defense operations, and national and world-wide tasking. Primary training units include: 119FW (F-16, ACY), 113FW (F-16, ADW), 175FW (A-10, BAL), VX23/Test Pilot School (F-18, NHK), 1/150th (H-60, MAG-49 (UH-1/CH-53D, NXX), 106 RQW (H-60, FOK), 227 ASOS (JTAC, ACY), and numerous ground and special forces units around the globe.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strategic Attack	PMC	FMC			FMC	FMC	PMC	PMC	FMC			FMC	FMC
Counterair	FMC	FMC			FMC	FMC	FMC	FMC	FMC			FMC	FMC
Counterspace													
Counterland	FMC	FMC			FMC	FMC	PMC	FMC	FMC	PMC		FMC	FMC
Countersea													
Information Operations	FMC	FMC			FMC			FMC	PMC				FMC
Electronic Combat Support	FMC	FMC			FMC	FMC		FMC	FMC				FMC
Command and Control	FMC	FMC			FMC		FMC	PMC	PMC				FMC
Air Drop	FMC	FMC			FMC	FMC	FMC	FMC	FMC				FMC
Air Refueling													
Spacelift													
Special Operations	FMC	FMC			FMC	FMC	FMC	FMC	FMC	PMC		PMC	FMC
Intelligence, Surveillance, and Reconnaissance	FMC	FMC			FMC	FMC	FMC	FMC	PMC			FMC	FMC

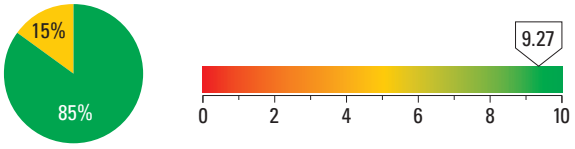
Legend: FMC, PMC, NMC

Encroachment Data

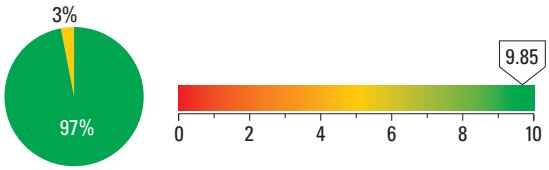
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strategic Attack	Minimal	Moderate	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Counterair	Minimal	Moderate	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Counterspace												
Counterland	Minimal	Moderate	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Countersea												
Information Operations	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Electronic Combat Support	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Command and Control	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Air Drop	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Air Refueling												
Spacelift												
Special Operations	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal
Intelligence, Surveillance, and Reconnaissance	Minimal	Minimal	Minimal		Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal

Legend: Minimal, Moderate, Severe

Capability Chart and Scores



Encroachment Chart and Scores



Warren Grove Assessment Details

Summary Observations	Summary Observations
Munitions restrictions and airspace limits are the largest factors affecting WGR's ability to provide best training environment in given areas. A no-drop scoring/ feedback system would eliminate restrictions imposed by munitions restrictions. Outstanding MOUT facility is tremendous asset in indicated areas. WGR does not have a suite of ranges, so does not provide added benefit to these areas, but does not detract as it is not a competing issue.	No comments.

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	N/A	N/A	9.81	8.02	8.02	**Encroachment Scores**	N/A	N/A	9.74	9.44	9.44
ANG has implemented a capabilities sharing program for threat emitters by mobilizing its emitter capabilities for scheduled exercises and training rotations. ANG Force Structure is projected to be relatively stable throughout the FYDP.						No comments.					

Warren Grove Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Strategic Attack	●	Evaluating if range-owned land is large enough to permit use of IAMS weapons. Currently, the range has limited use of LGBs. Actively pursuing additional land acquisition via REPI and partnerships with local conservations organizations IAW RAICUZ.
Scoring & Feedback System	Strategic Attack	●	A lack of IR scoring capability limits the ability to score night weapon impacts or provide valid aircrew feedback. The range is awaiting contract support for night/IR WISS scoring capability.
	Counterland	●	Same as above.
Infrastructure	Strategic Attack	●	The lack of a target fabrication facility limits the range's ability to construct a multitude of targets for extensive Strategic Attack training. This limits the versatility of the target array. A package has been submitted to the base civil engineer for construction of a target fabrication facility, but the facility is currently unfunded.
	Command and Control	●	The current control tower and communications suite is antiquated and in need of replacement by a building of greater functional configuration and visibility. This impacts training through loss of additional electronic capability to support flights operations (i.e. Gateway, Rover). Design funding has been awarded for a replacement tower. The project is currently at the 65% design review stage.
Range Support	Information Operations	●	The range is not currently connected to DTOC, limiting the ability to train in the decide and assess areas of the warfighting cycle. The range is pursuing SADL/Gateway connectivity, but remedy date is unknown at this time.
	Command and Control	●	Same as above.
	Intelligence, Surveillance and Reconnaissance	●	Same as above.
Small Arms Ranges	Counterland	●	WGR does not currently have a small arms range. This limits training opportunities for ground force employment and costs additional funds for off-site training. The current vision is to develop a long range plan to include a small arms range at this location.
	Special Operations	●	Same as above.
MOUT Facilities	Special Operations	●	MOUT targets are outstanding from the air, but are not the best for special operations forces. This results in a lack of ability for JTACS/Special Operations to train to infil/exfil for complete realistic scenario training. A new area for ground forces is under development.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)
Warren Grove Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Munitions Restrictions	Strategic Attack	●	The ability to expend weapons with marking charges may be restricted in the future, restricting the type of training munitions available for Strategic Attack, Counterair, and Counterland training.
	Counterair	●	Same as above.
	Counterland	●	Same as above.

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Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Yukon Assessment Details

Range Mission Description

Yukon R-2205 is managed by the U.S. Army. The USAF is a user, thus no formal USAF mission statement. The range does however support both live and inert freefall ordnance deliveries, both offensive and defensive electronic combat operations; as well as small arms and indirect fire missions. It is one of two key target areas utilized for RED FLAG-Alaska and NORTHERN EDGE Exercises.

Capability Data

Mission Areas	Landspace	Airspace	Seaspace	Underseaspace	Targets	Threats	Scoring & Feedback System	Infrastructure	Range Support	Small Arms Ranges	Collective Ranges	MOUT Facilities	Suite of Ranges
	Capability Attributes												
Strategic Attack	G	Y			Y	G	G	G	G			G	Y
Counterair	Y	Y			G	G	G	G	G			G	G
Counterspace	G	G			G	Y	G	G	G			G	G
Counterland	G	Y			Y	G	G	G	G			G	Y
Countersea													
Information Operations	G	G			G	G	G	G	G			G	G
Electronic Combat Support	G	Y			G	G	G	G	G			G	G
Command and Control	G	G			G	G	G	G	G			G	G
Air Drop	G	Y			Y	G	G	G	G			G	G
Air Refueling	G	G			G	G	G	G	G			G	G
Spacelift													
Special Operations	G	G			G	G	G	G	G			G	Y
Intelligence, Surveillance, and Reconnaissance	G	G			Y	Y	G	G	G			G	G

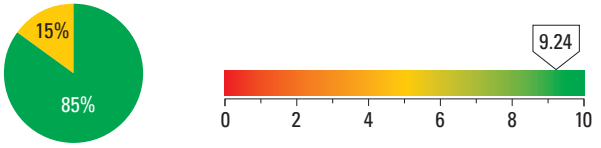
Legend: FMC (G) PMC (Y) NMC (R)

Encroachment Data

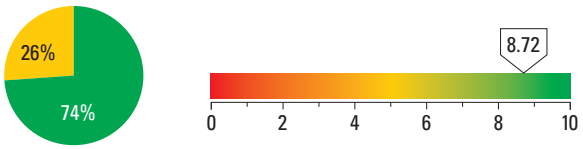
Mission Areas	Threatened and Endangered Species	Munitions Restrictions	Spectrum	Maritime Sustainability	Airspace	Air Quality	Noise Restrictions	Adjacent Land Use	Cultural Resources	Water Quality/Supply	Wetlands	Range Transients
	Encroachment Factors											
Strategic Attack	G	Y	Y		Y	G	Y	Y	G	G	Y	Y
Counterair	G	Y	G		Y	G	G	Y	G	G	G	G
Counterspace	G	Y	Y		G	G	G	G	G	G	G	G
Counterland	G	G	G		Y	G	Y	Y	G	G	Y	Y
Countersea												
Information Operations	G	G	G		G	G	G	G	G	G	G	G
Electronic Combat Support	G	G	Y		Y	G	G	Y	G	G	G	Y
Command and Control	G	G	G		G	G	G	G	G	G	G	G
Air Drop	G	Y	G		Y	G	G	Y	G	G	Y	Y
Air Refueling	G	G	G		G	G	G	G	G	G	G	G
Spacelift												
Special Operations	G	Y	Y		Y	G	G	Y	G	G	G	Y
Intelligence, Surveillance, and Reconnaissance	G	G	G		G	G	G	G	G	G	G	G

Legend: Minimal (G) Moderate (Y) Severe (R)

Capability Chart and Scores



Encroachment Chart and Scores



Yukon Assessment Details

Summary Observations	Summary Observations
Capability of Yukon - R-2205 to meet its missions can be summarized into three main areas of concern: (1) its size, (2) scheduling/usage conflicts; and (3) the nature of terrain (vegetation/topography/climate) and resulting ordnance restrictions. R-2205 lays within remote arctic mountains, tundra plains, and steep valleys. As such, developing and maintaining road access is logistically challenging. Targets, infrastructure, and threats can be confined. The second limiting factor is Army and USAF desired use at the same time. Rarely is joint use granted. If it is, it is rarely in a cohesive joint training manner (USAF is only a user group and does not manage the lands). Lastly, as noted previous, the impact areas of R-2205 can be sensitive to forest fires, and the proximity to FAA terminals can impact use of expendables.	Encroachment in its classic sense has an overall minimal impact on Yukon. It is bordered on the west by other military lands, to the south, and east by rugged and remote terrains. These rugged and remote lands are still accessible by the civilian populations, but require aircraft, boats, or ATVs to access. The land immediately to the north is rugged, but only provides a modest buffer. There is civilian build up 5–10 miles north and northwest, but it is not much of an impact. The range is road-accessible and can see heavy civilian access during hunting seasons. Chaff can be restricted when winds aloft drift chaff into FAA controlled airspaces. Flares can be severely restricted during dry summer months. The most prevalent encroachment issue centers on the two main services, the Army and Air Force, and their desires to use these small restricted spaces (air/ground) simultaneously and without mutually inclusive goals. Training events rarely are joint in nature and, as such, conflict in overall compatibilities and use of the range.

Historical Information, Results, and Future Projections						Historical Information, Results, and Future Projections					
Calendar Year	2008	2009	2010	2011	2012	**Calendar Year**	2008	2009	2010	2011	2012
Capability Scores	9.17	9.17	N/A	N/A	9.24	**Encroachment Scores**	8.90	8.90	8.88	N/A	8.72
The size and mission of the range is not projected to change over the next five years. The usage rate may increase with more Army units garrisoned (vice deployed); however, it is not known whether that increase in users will have an adverse impact on capabilities.						Encroachment factors have not changed in the recent past, nor are they projected to change over the next five years. Populations of both humans and wildlife are steady, hence, no human development is encroaching, and no wildlife-related mitigation is required.					

Yukon Detailed Comments

Capability Observations

Attributes	Assigned Training Mission	Score	Comments
Landspace	Counterair	●	The landspace is not ideal for effective counter-air training, and is too small for large scale operations. There is no remedy.
Airspace	Strategic Attack	●	The range has excellent targets sets, but in confined areas. The land/air spaces are too small to support large scale operations, but adequate for small unit tactics of 4-ship or less. If combining with surrounding MOA airspaces, then more than adequate for said operations. Dual use with Army range managers is still challenging without a foreseeable solution.
	Counterair	●	Same as above.
	Counterland	●	Same as above.
	Electronic Combat Support	●	Same as above, with the addition that chaff use is often restricted.
	Air Drop	●	Same as above.
Targets	Strategic Attack	●	Poor road conditions and range access limits the types of targets/materials. The range is unable to conduct EOD operations during 7 month winter periods, so there is a short target build season that conflicts with summer flight operations. Sensitive tundra is present in most areas surrounding existing target sets. This limits target variety and replenishment/expansion capability. There is no remedy.
	Counterland	●	Same as above.
	Air Drop	●	Same as above.
	Intelligence, Surveillance, and Reconnaissance	●	Same as above.
Threats	Counterspace	●	GPS Jamming severely restricted; there is no known remedy.
	Intelligence, Surveillance, and Reconnaissance	●	The range has excellent EW/EC threats. IR/mobile threats are manpower intensive and large O&M resources. he range continues to work toward procuring easier and more modular IR/EO/Mobile threat systems.
Suite of Ranges	Strategic Attack	●	There are limitations on the size of areas available for current weapon types, which limits full spectrum ordnance deliveries. The range continues to work on WDZ products with Air Combat Command to refine footprint accuracy, and with the Army for realistic imposed restrictions.
	Counterland	●	Same as above.
	Special Operations	●	Same as above.

Figure 2-36 Air Force Capability and Encroachment Assessment Detail (continued)

Yukon Detailed Comments

Encroachment Observations

Factors	Assigned Training Mission	Score	Comment
Munitions Restrictions	Strategic Attack		Chaff and flare are limited by restrictions as noted in observations. There are significant ordnance restrictions due to Army-directed footprint overlayment of manned threat sites and range infrastructure. This limits full spectrum self-defense EC procedures and/or forward firing and freefall munitions training. There is no remedy.
	Counterair		The small size of R-2205 limits full spectrum counterair training. Tactics and training are limited to small numbers. No live air-to-air ordnance deliveries. There are moderate chaff and flare restrictions in summer months.
	Counterspace		GPS jamming is highly restricted; no known remedy.
	Air Drop		There are limited drop zones, which restricts variety and tactical challenges; no known remedy.
	Special Operations		There are restricted door gunnery patterns and highly restricted personnel movements for opposing forces during simultaneous JCAS/Live fire/freefall ordnance delivery events. This limits realistic TTP practice; no known remedy.
Spectrum	Strategic Attack		Limited spectrum is available for IO and IW warfare; no known remedy.
	Counterspace		GPS jamming is highly restricted; no known remedy.
	Electronic Combat Support		Limitations to use of spectrum hampers Threat Engagement and C4ISR training. The range is unable to exercise full systems usage. A remedy to this limitation is detailed and persistent applications procedures and processes through the AF Spectrum Management Office in order to garner more spectrum approvals. Some gains made to allow use of two previously non-allowed systems.
	Special Operations		Limited spectrum is available for unique communications needs. There is no resident SATCOM or GPS-burst capability; no known remedy.
Airspace	Strategic Attack		The restricted area is relatively small for large scale exercises with multiple platforms/weapons. No remedy. The airspace is suitable if combining with surrounding MOA airspaces. There are good target sets once inside airspace.
	Counterair		Same as above.
	Counterland		Same as above. In addition, the range can be optimized for JCAS operations, but is limited to 4-ship if MOA airspace is not available.
	Electronic Combat Support		The restricted area is relatively small for large scale exercises with multiple platforms/weapons. There is no remedy.
	Air Drop		There is limited tactical airlift/airdrop capability due to limited airspaces. Airdrop requires surrounding MOA activations to provide enough maneuver space. Conflicts are possible when Army UAV operations are being conducted near the specified DZ/LZs.
	Special Operations		Same as above.
Noise Restrictions	Strategic Attack		The Fairbanks population is near the western border of area. There is no remedy.
	Counterland		Same as above.
Adjacent Land Use	Strategic Attack		The Fairbanks area, MOA edge and airways border the western and northern borders. The southern border is a critical flyway for waterfowl and civilian aviation. There is no remedy.
	Counterair		Same as above.
	Counterland		Same as above.
	Electronic Combat Support		Same as above.
	Air Drop		Same as above.
	Special Operations		Same as above.
Wetlands	Strategic Attack		There are sensitive tundra areas within and around range, which limits emplacement of realistic targets and EC training equipment to small impact areas. There is no remedy.
	Counterland		Same as above.
	Air Drop		Same as above.
Range Transients	Strategic Attack		Army restrictions on USAF/other joint personnel movements/siting on-range inhibits or hampers realistic training. In addition, civilian access during hunting season impacts usage of equipment and ordnance expenditures.
	Counterland		Same as above.
	Electronic Combat Support		Same as above.
	Air Drop		Same as above.
	Special Operations		Same as above.

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Table 2-12 Air Force Range Capability and Encroachment Assessment Comparison

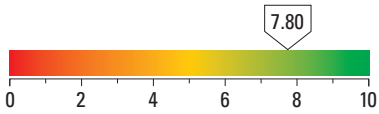
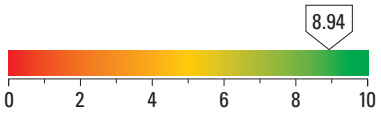
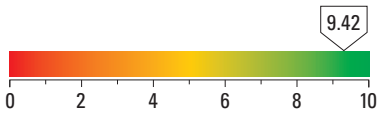
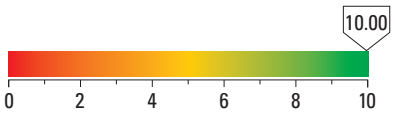
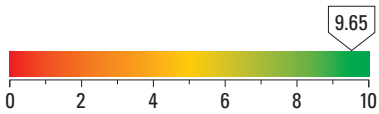
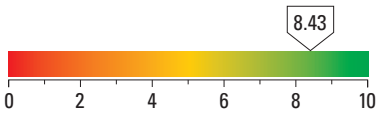
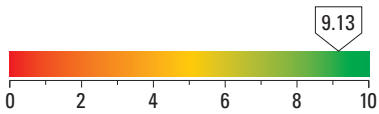
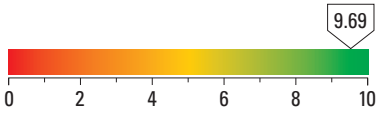
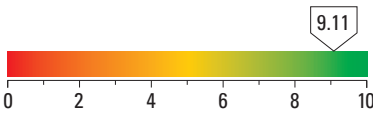
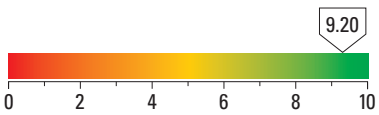
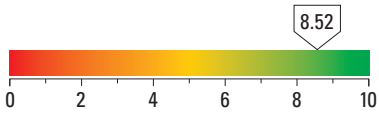
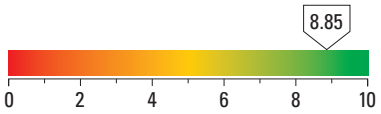
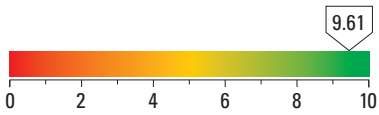
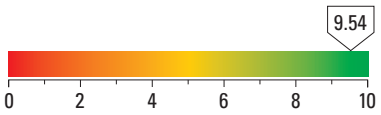
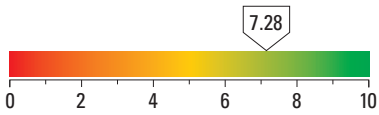
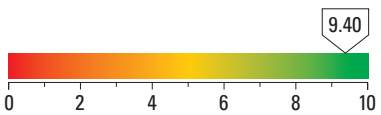
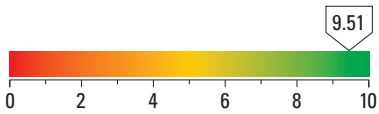
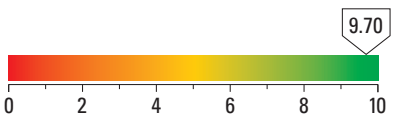
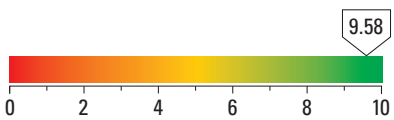
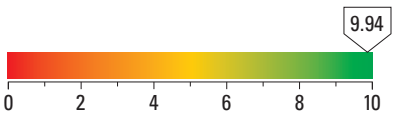
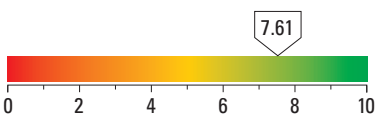
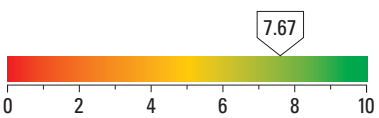
Range Name	Capability Score	Encroachment Score
Adirondack		
Airburst		
Atterbury		
Avon Park		
BMGR		
Blair Lake		
Bollen		
Cannon		
Claiborne		
Dare County		
Draughon		

Table 2-12 Air Force Range Capability and Encroachment Assessment Comparison (continued)

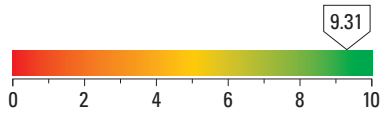
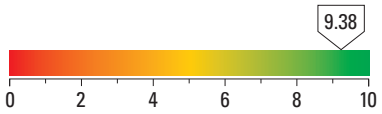
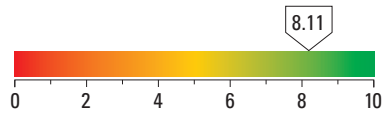
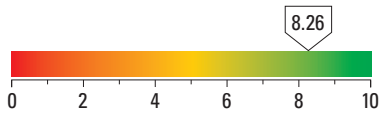
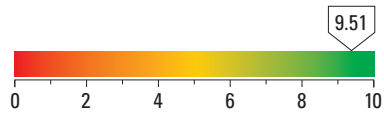
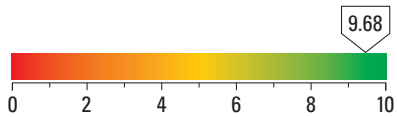
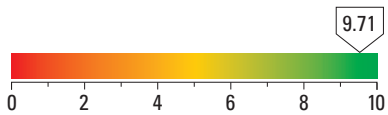
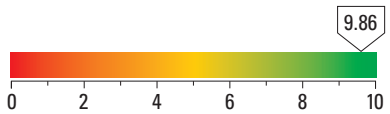
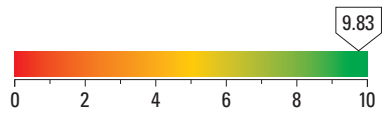
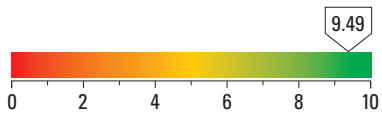
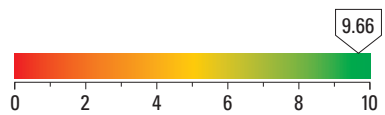
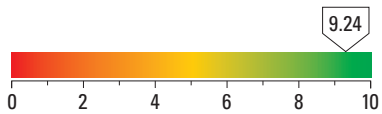
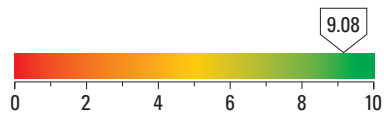
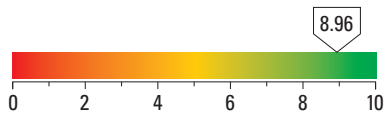
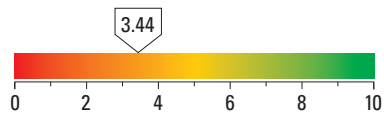
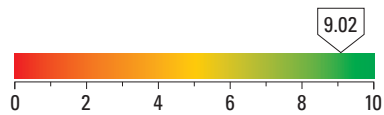
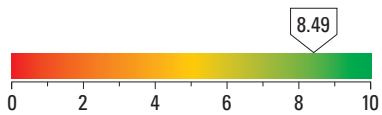
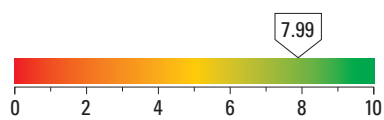
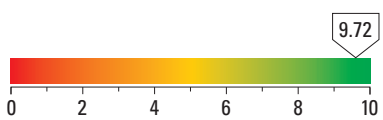
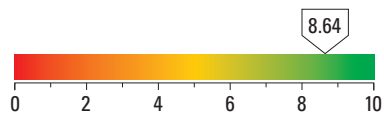
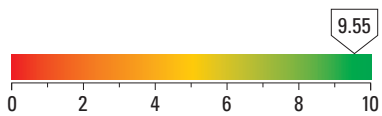
Range Name	Capability Score	Encroachment Score
Edwards Flight Test Range		
Eglin Test and Training Complex		
Falcon		
Grand Bay		
Grayling		
Hardwood		
Holloman		
Idesuna Jima		
Jefferson		
McMullen		
Melrose		

Table 2-12 Air Force Range Capability and Encroachment Assessment Comparison (continued)

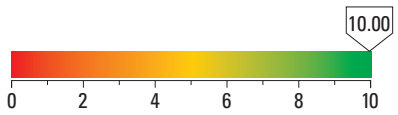
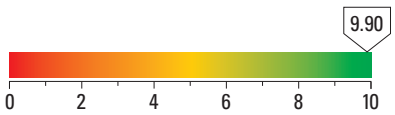
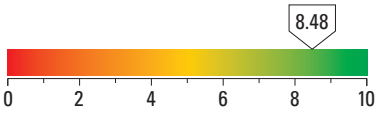
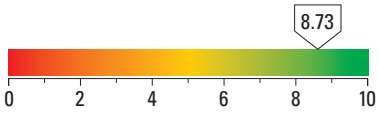
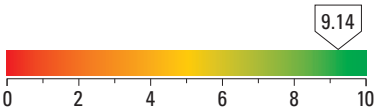
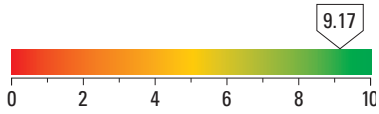
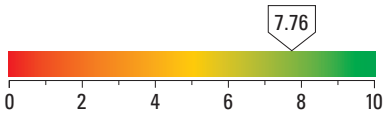
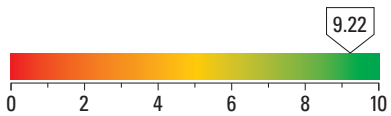
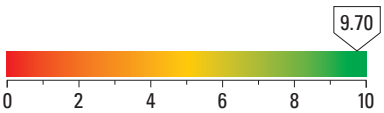
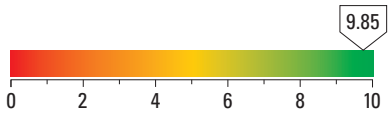
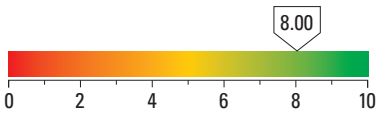
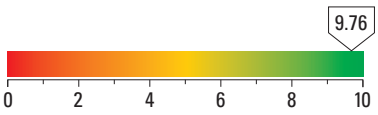
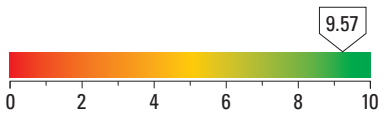
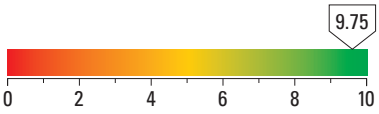
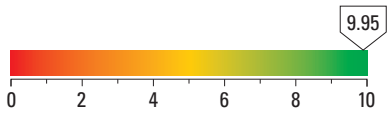
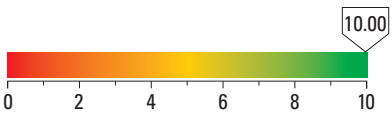
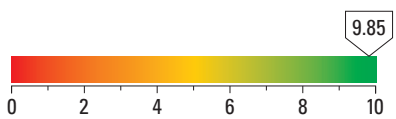
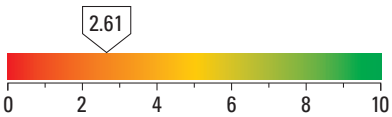
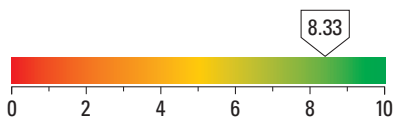
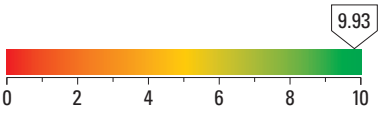
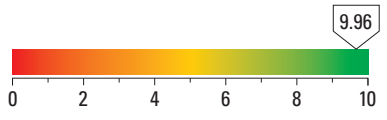
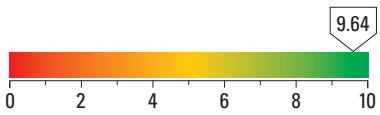
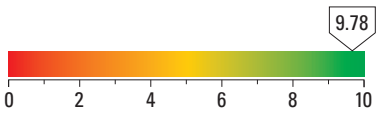
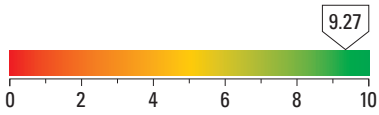
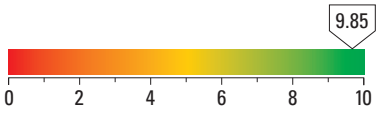
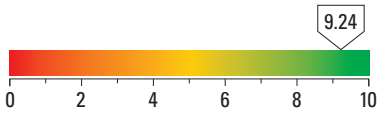
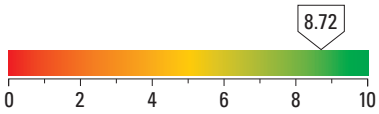
Range Name	Capability Score	Encroachment Score
Mountain Home Ranges		
NTTR		
Oklahoma		
Pilsung		
Poinsett		
Polygone		
Razorback		
Shelby Ranges		
Smoky Hill		
Tori Shima		
Townsend		

Table 2-12 Air Force Range Capability and Encroachment Assessment Comparison (continued)

Range Name	Capability Score	Encroachment Score
UTTR		
Warren Grove		
Yukon		

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3 DOD'S COMPREHENSIVE TRAINING RANGE SUSTAINMENT PLAN

NDAA Section 366(a)(1) required DoD to develop a comprehensive training range sustainment plan. DoD has established a complete range planning and management program under its SRI addressing this requirement. The SRI provides a flexible and adaptive planning framework that guides continuing, cooperative, and coordinated range sustainment efforts between the OSD and the Military Services, as well as mechanisms that facilitate cooperation with local, state, and regional governments; other federal agencies; and NGOs. The program includes policy, programming, outreach, legislative, and related efforts to address training requirements and long-term access to ranges, airspace, and seaspace.

This chapter builds upon the information from the 2014 SRR and highlights key aspects to meet NDAA Sections 366(a)(4)(c) requirements to report on SRI status.

3.1 GOALS AND MILESTONES

DoD has used the following set of seven shared goals and milestones since the 2006 SRR; they have been revalidated and are applicable for this report:

- Mitigate Encroachment Pressures on Training Activities from Competing Operating Space (landspace, airspace, seaspace, and cyber issues)
- Mitigate Frequency Spectrum Competition
- Meet Military Airspace Challenges
- Manage Increasing Military Demand for Range Space
- Address Impacts from New Energy Infrastructure and Renewable Energy Impacts
- Anticipate Climate Change Impacts
- Sustain Excellence in Environmental Stewardship

Using these goals as a common framework, each Military Service developed a set of milestones and actions to achieve common objectives. Tables 3-1 through 3-7 show the current status of each milestone. Based on annual assessment data, programmatic goals and milestones are reviewed and updated annually to ensure the SRI continues to effectively address potential future training requirements and constraints.

Table 3-1 Encroachment Actions and Milestones

Goal Mitigate Encroachment Pressures on Training Activities from Competing Operating Space (land, air, sea, space, and cyber issues)

Actions	Milestones	Status	Additional Service Comments
Army			
Review and maintain Installation Range Complex Master Plans (RCMPs).	▸ Review and update RCMPs annually for required installations.	Ongoing	
Execute the ACUB Zone Program to protect the military mission and offset training restrictions.	▸ Implement ACUBs at installations to protect training, testing, and operations from encroachment effects, permanently protecting land acreage from incompatible land uses. Continue programming validated environmental requirements to support ACUBs during Program Objective Memorandum (POM) 2017–2021.	Ongoing	
	▸ Develop a consistent and clearly defined ACUB strategy, including metrics for program success and prioritization measures that build from the ACUB Implementation Guidance issued in FY2012.	Ongoing	
Marine Corps			
Continue to analyze and assess encroachment, quantitatively and qualitatively, at the installation, regional, and Service levels	▸ Include encroachment analysis in Regional Range Complex Management Plans (RCMPs) Marine Corps Installation (MCI)-East MCI-West	Ongoing	
	▸ Execute ECPs	Ongoing	
	ECPs completed: ▸ MCAS Yuma ▸ MCAGCC Twentynine Palms ▸ MCB Quantico ▸ MCAS Cherry Point ▸ MCAS Beaufort/Townsend Range ▸ MCB Camp Lejeune/MCAS New River ▸ Blount Island Command ▸ MCLB Albany ▸ Combined ECP for Southern California installations (MCB Camp Pendleton, MCAS Camp Pendleton, MCAS Miramar, MCRD San Diego) ▸ Joint Base(Navy/Marine Corps) Guam ▸ MCB Hawaii ▸ MCRD Parris Island ▸ Mountain Warfare Training Center (MWTC) Bridgeport ▸ MCLB Barstow ▸ MCB Pendleton ▸ MCAS Miramar	Complete	
	ECP ongoing: ▸ MCAS Iwakuni ▸ MCAGCC (update) ▸ MCAS Beaufort (update) ▸ Blount Island (update) ▸ MCAS Cherry Point (update) ▸ MCLB Albany (update) ▸ MCB Camp Lejeune/MCAS New River (update) ▸ MCAS Miramar (update)	Ongoing (funded in FY2014)	
	ECPs planned: ▸ MCAS Yuma	Funded in FY2015	
	Facilitate/support regional inter-agency and inter-governmental partnerships: ▸ Western Regional Partnership (WRP) ▸ Southeast Regional Partnership for Planning and Sustainability (SERPPAS)	Ongoing	

Table 3-1 Encroachment Actions and Milestones (continued)

Goal Mitigate Encroachment Pressures on Training Activities from Competing Operating Space (land, air, sea, space, and cyber issues)

Actions	Milestones	Status	Additional Service Comments
Marine Corps (continued)			
Continue to evaluate, plan for, and execute encroachment partnering opportunities per 10 U.S.C. § 2684a.	Execute buffer lands acquisition: MCI-National Capital Region ▸ Quantico (416.8 acres [ac.]) MCI-EAST ▸ MCAS Beaufort (3,317.8 ac) ▸ Townsend Bombing Range (30,235.9 ac) ▸ MCAS Cherry Point (5,831.9 ac) ▸ Camp Lejeune (3,384.7 ac) ▸ Market Based Conservation Initiative (~1,800 ac within Military Training Route [MTR] VR1046) MCI-WEST ▸ Camp Pendleton (1,681.2 ac) ▸ Twentynine Palms (2,216.6 ac)	Complete	
	▸ Establish partnership with USFWS and State of North Carolina to manage endangered species on acquired buffer land to increase species population off-base and thereby reduce training restrictions on-base.	Ongoing	
	▸ Evaluate opportunities in all CONUS MCI regions.	Ongoing	
Navy			
Employ proactive interaction with all Services to sustain installation and range capabilities.	▸ Continue Naval Special Warfare Command (NSWC) and Training and Education Command (TECOM) collaboration and exploit expanding training opportunities in CMAGR Special Warfare live-fire ranges as agreed with USMC. Maintain progress toward associated Environmental Assessments (EAs).	Complete	MCAS Yuma is supporting NSWC with 24-hour Range Operations Control availability for Sea, Air, and Land (SEAL) Final Training Exercises. Both commands are using on-going and collaborative interaction to establish further range capabilities and National Environmental Policy Act (NEPA) compliance.
	▸ Continue NSWC and TECOM collaboration and support for establishment of SUA over Navy Special Warfare training space.	Expected completion in FY2015; FAA approval required	
Continue to analyze and assess encroachment, quantitatively and qualitatively at the installation and regional levels.	▸ Update Encroachment Action Plans (EAPs) as required. As updated, EAPs are to be published electronically for review by all required Navy stakeholders.	Ongoing	
	▸ Use the Navy Community Liaison and Plans Officers to continuously engage communities where the potential encroachment of installations and land ranges may arise.	Ongoing	
Continue to evaluate, plan for, and execute partnering opportunities per 10 U.S.C. Section 2684a.	▸ Use existing parallel processes to update applicable EAPs and identify all encroachment partnering opportunities for associated Navy training ranges.	Ongoing	

Table 3-1 Encroachment Actions and Milestones (continued)

Goal Mitigate Encroachment Pressures on Training Activities from Competing Operating Space (land, air, sea, space, and cyber issues)

Actions	Milestones	Status	Additional Service Comments
Coordinate an integrated approach to address Service-wide, as well as locally isolated, encroachment issues.	▸ Establish and use a "task force" approach with representation from the Office of the Chief of Naval Operations (OPNAV), System Commands, Commander, Navy Installations Command, and Fleet-level Commands to address encroachment challenges.	Ongoing	In 2011, the Navy established under 3-star leadership, "Task Force Compatibility and Readiness Sustainment." The Task Force manages the Navy's encroachment program to ensure mission sustainment for all Navy installations, test and training ranges, air and water operating areas, SUA, and military training routes.
Air Force			
Develop the Center Scheduling Enterprise (CSE) system and integrate flight scheduling systems with other scheduling systems.	▸ Modify utilization reports to provide a complete and accurate account of airspace and range usage (FY2011–FY2015).	Ongoing	Progress continuing into FY2015.
	▸ Use enterprise architecture to institute a streamlined version of CSE (FY2009–FY2015).	Ongoing	
	▸ Deploy CSE system throughout the Air Force.	Ongoing	
	▸ Provide a quantitative basis for defending current requirements and developing future needs.	Ongoing	
	▸ Develop an interface between CSE and the Army/Marine Corps Range Facility Management Support System (RFMSS) (FY2011–FY2015).	Ongoing	

Table 3-2 Frequency Spectrum Actions and Milestones

Goal Mitigate Frequency Spectrum Competition

Actions	Milestones	Status	Additional Service Comments
Army			
Execute an ACUB to protect spectrum at Fort Huachuca, home of the Electronic Proving Ground.	▸ Continue implementing the Fort Huachuca ACUB proposal.	Ongoing	
	▸ Monitor and assess the ACUB at Fort Huachuca through the biennial review process.	Ongoing	
Design new ranges to minimize spectrum competition.	▸ Complete the installation of fiber optic cabling to support a wireless network and control targetry in order to minimize spectrum interference on ranges by FY2017.	Ongoing	
Marine Corps			
Analyze and assess frequency spectrum issues potentially impacting training capabilities at range complexes	▸ Assess operational impacts of frequency encroachment at the range complex level.	Ongoing	Frequency spectrum encroachment analysis is being incorporated into the RCMP and the ECP processes, as RCMPs and ECPs are prepared, reviewed, and/or revised.
	▸ Incorporate frequency spectrum encroachment analysis and potential mitigation measures into planned ECPs; incorporate updates to existing ECPs.	Ongoing	
Navy			
Analyze and assess frequency spectrum issues potentially impacting training capabilities at the range complex and regional level.	▸ Update the RCMPs and EAPs to identify and assess frequency spectrum conflicts, shortfalls, and the impacts on Navy training as the documents undergo periodic updates.	Ongoing	
	▸ Advocate for the protection of military frequencies used by range capabilities that could be affected by frequency re-allocation and/or the National Broadband Plan.	Ongoing	The Navy's efforts to maintain ranges' access to spectrum as part of Navy-wide action is led by OPNAV N2/N6.
Air Force			
Improve frequency/spectrum considerations in AF basing decision-making	▸ Incorporate frequency/spectrum as a key and quantifiable factor in the AF corporate basing process	Completed	Encroachment was added as a basing factor in 2014.

Table 3-3 Airspace Actions and Milestones

Goal Meet Military Airspace Challenges

Actions	Milestones	Status	Additional Service Comments
Army			
Develop an EA process to facilitate increased access to restricted airspace in support of UAS training.	▸ Initiate two pilot project EAs to adjust SUA in support of UAS training at major training and testing installations.	Pending	Effort to be initiated in FY2015.
Marine Corps			
Define future requirements for military airspace, current and projected airspace shortfalls, and possible courses of action to mitigate shortfalls at installation, range complex, regional, and Service levels.	▸ Include airspace analysis in RCMPs.	Ongoing	
	▸ Assess airspace requirements and shortfalls in preparation for and submission of Regional Airspace Plans. Cherry Point Air Traffic Control continues to work with Washington Center to acquire 'controlling agency' responsibilities for the airspace above the Cherry Point ranges as well as airspace over the northern Dare County Ranges extending to FL230 with a capability up to FL290. This would increase the Air Traffic Control Assigned Airspace significantly and lead to a more dynamic high altitude training capability over eastern NC.	Ongoing	Preparing the Regional Airspace Plans is an annual requirement (OPNAV INST 3770.2K) for Marine Corps Regional Airspace Coordinators.
	▸ Complete strategic-level assessment of range requirements and shortfalls regarding training land and airspace.	Ongoing	Presently in analysis per Expeditionary Force 21, MCSCP published in 2014.
	▸ Continue airspace expansion efforts for MCAGCC Twentynine Palms.	Ongoing	Proposals to establish new airspace and modify existing airspace supporting newly acquired lands delivered to the FAA in April 2014 for processing
	▸ Continue to track airspace issues and FAA initiatives potentially affecting military activities.	Ongoing	
	▸ Continue airspace expansion planning for Townsend Bombing Range.	Ongoing	
	▸ R2507 Expansion. The expansion will establish military restricted airspace over the entire range's boundaries. It will support range de-confliction of aviation and ground training activities occurring simultaneously within the airspace expansion area as well as support airspace shortfalls for aviation training requirements.	Ongoing	Proposal to establish new airspace delivered to the FAA in August 2014 for processing.
	▸ Collaborating with other DoD-installations on validating airspace requirements in conjunction with land withdrawal renewals. Example, East Mesa in relation to R-2512.	Ongoing	
Navy			
Define future requirements for military airspace, current and projected airspace shortfalls, and possible courses of action to mitigate shortfalls at installation, range complex, and regional and service levels.	▸ Use RCMPs and EAPs to assess future airspace requirements based on projected force structure changes/positioning and new weapon systems and missions; recommend possible courses of action to mitigate climate change trends, and Regional Airspace Plans; identify requirements for complementary airspace for land and sea training space for each Navy range complex during the POM process.	Ongoing	
Air Force			
No current actions underway			

Table 3-4 Range Space Actions and Milestones

Goal Manage Increasing Military Demand for Range Space

Actions	Milestones	Status	Additional Service Comments
Army			
Field live and synthetic-Integrating Architecture (IA) to enable the Integrated Training Environment (ITE).	▸ Field live and synthetic-IA to 15 AC installations supporting the operational unit training.	Ongoing	.
Validate the Regional Collective Training Capability (RCTC) sites.	▸ Review and re-validate the RCTC sites (installations) following future stationing announcements.	Ongoing	
Enable JPMRC	▸ Enable enhanced home-station training in the Pacific by the 4th Quarter FY2015.	Ongoing	
Update the TC 25-1 Training Lands that define doctrinal land requirements.	▸ Publish new doctrine by the 3rd Quarter FY2015. ▸ Update Army Range Requirements Model (ARRM) to determine Army training land requirements by the 3rd Quarter FY2015.	Ongoing	
Review the Army Training Land Strategy (ATLS) for incorporation into the Facility Investment Strategy (FIS). Prioritize Army training land investments through land acquisition, compatible use buffering, sustainable management, and use of other federal land.	▸ Coordinate review and incorporate training land investment priorities into FIS for POM 2018-2021.	Ongoing	Review the ATLS for incorporation into the FIS. Prioritize Army training land investments through land acquisition, compatible use and buffering, sustainable management, and use of other federal land.
	▸ Implement an annual review and update process for the ATLS as part of the FIS.	Ongoing	
Execute Training Land Acquisitions to offset the nearly 5 million acre shortfall in training land assets.	▸ Fort Irwin/National Training Center (NTC), CA—Open the Western and Southern Expansion Areas (WEA and SEA) for training.	On hold	Opening of the WEA has been put on hold (possibly indefinitely) due to significant ongoing delays and costs related to endangered species (desert tortoise) management and mitigation.
	▸ Fort Polk/Joint Readiness Training Center (JRTC), LA—U.S. Army Corps of Engineers (USACE) complete title work and appraisals of property located in priority expansion areas and initiate formal negotiations with land owners.	Partially Completed	USACE continues to complete necessary title work and appraisals. Total acquired exceeds 32,500 acres.
	▸ Fort Benning, GA—Complete the EIS to study proposed areas for training land acquisition by 4th Quarter FY2011.	On Hold	Completion of the Final EIS and ROD continues to be delayed due to pending Army force structure decisions. A decision on land acquisition will not be made until Army force structure decisions are announced. USACE real estate planning studies completed 4th Quarter FY2011. USACE to complete title work and appraisals pending ROD to proceed.

Table 3-4 Range Space Actions and Milestones (continued)

Goal Manage Increasing Military Demand for Range Space

Actions	Milestones	Status	Additional Service Comments
Marine Corps			
Define future requirements for military airspace, current and projected airspace shortfalls, and possible courses of action to mitigate shortfalls at installation, range complex, regional, and Service levels.	▸ Include range requirements analysis in regional RCMPs.	Ongoing	
	▸ Facilitate enhanced cross-service utilization of range areas in Regional RCMPs. Strong relationships and an effective network of operating forces' subject matter experts (SMEs) and range managers provide operational planners and unit-level trainers with assistance in identifying non-Marine Corps locations that can support their training requirements. Agility of operating forces' training plans is shifting somewhat to explore newer training venues for revised mission sets that span greater geographic areas. Other DoD-installations are the most desired venues. Range scheduling is often problematic, as each Service's unit training and pre-deployment training tempos vary and each Service-level training responsibilities take primacy over other desired users. Access and transit to other public lands addresses primary requirements to connect Marine Corps installations with other DoD installations and or public lands.	Ongoing	
	▸ Initiate strategic-level assessment of range requirements and shortfalls regarding training land and airspace.	Ongoing	Preliminary assessment prepared in FY2011; additional studies in furtherance of strategic assessment objectives per Expeditionary Force 21, MCSCP, and DPRI are ongoing, including OSD-directed Pacific Training Analysis, and Marine Corps assessments of training land requirements in the Pacific region.
	▸ Continue range expansion efforts for MCAGCC Twentynine Palms.	Ongoing	Lands acquired per FY2014 NDAA, efforts to acquire private lands, establish associated SUA and establish required range support/infrastructure are ongoing.
	▸ Continue range expansion planning for Townsend Bombing Range.	Ongoing	ROD signed Jan 2014, Phase I land acquisition underway.
	▸ Conduct strategic land requirements analysis	Ongoing	Presently in analysis per Expeditionary Force 21, MCSCP published in 2014.
Navy			
Define future requirements for land ranges and other areas to support training, current and projected land shortfalls, and possible courses of action to mitigate shortfalls at Navy range complexes.	▸ PACFLT will use the RCMP update cycle to document and assess future requirements for Navy air, sea, and land ranges based on force structure change, changes in training and readiness standards, and new weapon systems and missions; compete new range requirements in Navy service-level Programming, Budgeting, and Execution (PPBE) process. USFF will use the Training Range Events and Capabilities software module to accomplish the same assessment.	Ongoing	RCMP rewrites are underway on a staggered basis. Validated shortfalls in range capabilities will be assessed and competed for resources during each POM development.
Air Force			
Develop range configuration to support urban training.	▸ Develop urban training complex capabilities on Melrose Range.	Completed	Completed Mountainside Village and Hillside Tunnels in FY2012. Completed rural village and City-center training venues in early FY2014. These training sites now enable realistic air/ground integration training for Air Force Special Operations Command (AFSOC) AC-130, and other units with elements of Special Operations Forces ground components.

Table 3-5 Energy Actions and Milestones

Goal Address Impacts from New Energy Infrastructure and Renewable Energy Impacts

Actions	Milestones	Status	Additional Service Comments
Army			
Assess on-going Army energy security projects for impact on mission.	▸ Participate in the DoD Energy Subcommittee and assess strategic implications of infrastructure policy on Army training equities.	Ongoing	
Marine Corps			
Support OSD-directed energy infrastructure policy and assessments.	▸ Support OSD initiatives to assess ability to support renewable energy development projects in the vicinity of military installations via Mission Compatibility Analysis Tool (MCAT), per NDAA 2011.	Ongoing	
Implement Marine Corps Interim Policy on Conduct of Compatibility Assessments for Off-Installation Renewable Energy Projects.	▸ Establish criteria for assessing potential impacts of renewable energy development on military training ranges and airspace. ▸ Comply with requirements set forth in 32 CFR 211 for the conduct of Mission Compatibility Evaluations of renewable energy project proposals. ▸ Ensure that all echelons of MCICOM and other appropriate Marine Corps entities monitor proposed energy infrastructure development in vicinity of Marine Corps installations and military training airspace. ▸ Execute formal outreach and engagement programs with all governmental, non-governmental, private, and commercial stakeholders of renewable energy programs relevant to Marine Corps activities. ▸ Conduct formal and informal renewable energy Mission Compatibility Assessments at installation, MCI region, and Headquarters levels.	Ongoing	
Implement the Marine Corps Expeditionary Energy Strategy.	▸ Continue operations at the Marine Corps Expeditionary Energy Office (E2O) (established 2009). ▸ Plan and execute strategy to substantially reduce energy footprint of operational forces (e.g., 50% reduction in fossil fuel use by operating forces by 2025).	New	New action and milestone.
Implement MCI Energy Conservation Strategy.	▸ Implement MCI Energy Conservation Strategy.	New	New action and milestone.
Navy			
Engage renewable energy proponents to mitigate or minimize impacts on naval training.	▸ Continuously respond to requests for analysis on potential impacts to range capabilities and range space from proposed energy infrastructure on range capabilities.	Ongoing	
	▸ Use the MCAT to conduct mission impact assessments.	Ongoing	MCAT currently deployed for Navy use for FY2011 NDAA Section 358 Formal Review Process.
	▸ Continue to interact with BOEM state renewable energy task forces to support an iterative assessment of wind energy development proposals to minimize impacts to Navy/DoD readiness requirements in federal waters.	Ongoing	

Table 3-5 Energy Actions and Milestones (continued)

Goal Address Impacts from New Energy Infrastructure and Renewable Energy Impacts

Actions	Milestones	Status	Additional Service Comments
Air Force			
Engage renewable energy proponents in order to collaborate on site selections.	▸ Continue to coordinate with Department of Energy (DOE) and American Wind Energy Association (AWEA) to share data from development screening tools.	Ongoing	Air Force coordinates through Siting Clearinghouse process.
Study potential impacts and mitigation techniques.	▸ Expand Radar Toolbox to predict impacts on ASR-11 radar from wind turbines.	Completed	Air Force Flight Standards Agency is using radar toolbox for ASR-11 evaluations.
Create and field a DoD tracking and visualization tool for energy proposals.	▸ Develop MCAT.	Ongoing	Awaiting completion of Navy's MCAT modifications.
Incorporate Energy Action into official guidance on encroachment.	▸ Develop Air Force Instruction (AFI) that includes energy encroachment initiatives	Completed	AFI 90-2001, Encroachment Management, was published in September 2014.
Prepare for increased renewable energy priority and development	▸ Participate in the White House Task Force on Wind Turbine Impacts on Radar.	Ongoing	
	▸ Engage the Bureau of Land Management (BLM) to improve siting process.	Ongoing	

Table 3-6 Climate Actions and Milestones

Goal Anticipate Climate Change Impacts

Actions	Milestones	Status	Additional Service Comments
Army			
Assess Global Climate Change risks and vulnerabilities.	▸ Track changes in range Sustainment, Restoration, and Modernization (SRM) and Integrated Training Area Management (ITAM) systems resulting from unexpected weather patterns.	Ongoing	
Marine Corps			
Support OSD-directed climate change policy and assessments.	▸ Continue to respond to requests for data and analysis on potential climate change impacts on range operations and capabilities (as directed by OSD).	Ongoing	
	▸ Assess climate change and appropriate encroachment management actions in installation and regional ECPs.	New	
	▸ Continue leadership role at Headquarters level in DoD CAA Services' Steering Committee, Subcommittee for Global Climate Change.	Ongoing	Marine Corps representative is currently the Subcommittee chair.
Navy			
Support OSD-directed climate change policy and assessments.	▸ Implement DoD QDR Global Climate Change directives.	Ongoing	
	▸ Observe and assess climate change impacts and include in POM planning the specific applied climate change trends and vulnerabilities to range capabilities identified by DoD.	Ongoing	
Air Force			
Assess Global Climate Change risks and vulnerabilities.	▸ Assess climate change risks and vulnerabilities.	Ongoing	

Table 3-7 Environmental Stewardship Actions and Milestones

Goal Sustain Excellence in Environmental Stewardship

Actions	Milestones	Status	Additional Service Comments
Army			
Monitor the Army Range Assessment Program	▸ Continue reviews of assessments every five years	Ongoing	
Marine Corps			
Maintain Service-wide environmental management and range sustainability programs in accordance with applicable laws and regulations..	▸ Engage in national regulatory and legislative processes on issues that may potentially impact range sustainability or range readiness in coordination with the OSD.	Ongoing	
	▸ Continue to engage local, regional, and state regulatory agencies on issues that may affect range sustainability or range readiness.	Ongoing	
	▸ Explore broader, landscape-level approaches and partnerships to meet regulatory and stewardship responsibilities for natural resources (e.g., wetland and endangered species banks) at the regional and national levels in coordination with the other branches of service: the DOI, USACE, and the Environmental Protection Agency.	Ongoing	
	▸ Encourage NGOs and local communities to work on regional solutions for land use conflicts (e.g., SERPPAS and WRP).	Ongoing	
Navy			
Execute Service-wide environmental management and range sustainability programs as required by law/regulation.	▸ Evaluate the implementation and effectiveness of Integrated Natural Resources Management Plans (INRMPs) at the end of each FY.	Ongoing	
	▸ Continue NEPA, MMPA, and ESA compliance requirements for at-sea operational areas and range complexes.	Ongoing	
Air Force			
Continue environmental management and range sustainability programs..	▸ Maintain active participation in Range Sustainment Initiatives, (e.g., SERPPAS and WRP).	Ongoing	

3.2 FUNDING

NDAA Section 366(a)(3)(C) requires DoD and the Military Services to report on funding requirements associated with implementing range sustainability initiatives. Four categories are used as a frame of reference for reporting training range sustainability requirements. Descriptions and examples of the funding categories are found in Table 3-8 below.

Table 3-8 DoD Sustainable Ranges Initiative Funding Categories

Funding Category	Description	Specific Examples
Modernization and Investment	Research, development, acquisition, and capital investments in ranges and range infrastructure. It includes related items such as real property purchases, construction, and procurement of instrumentation, communication systems, and targets.	▸ Constructing new Multi-Purpose Training Ranges at Army installations ▸ Constructing Improvised Explosive Device (IED) Defeat Lanes ▸ Upgrading Small Arms Ranges
Operations & Maintenance	Funds allocated for recurring activities associated with operating and managing a range and its associated infrastructure, including funds dedicated to range clearance, real property maintenance, and range sustainment plan development.	▸ Clearing unexploded ordnance prior to range construction ▸ Implementing CivPay for Range Operators at Army installations
Environmental	Funds dedicated to environmental management of ranges, including range assessments, response actions, and natural and cultural resource management planning and implementation.	▸ Conservation funding for INRMPs and Integrated Cultural Resources Management Plans (ICRMPs) ▸ Environmental mitigation costs associated with range modernization and range construction ▸ Conducting Range Assessments
Encroachment	to actions optimizing accessibility to ranges by minimizing restrictions that do or could limit range activities, including outreach and buffer projects.	▸ ACUB Program administration and support ▸ Encroachment plans

Table 3-9 presents the funding data for FY2014 – FY2019. FY2014 actual funded levels are provided as a reference point. Data for FY2014 – FY2019 represents the requested Military Service requirements submitted for the FY2015 Presidential Budget, and should not be confused with actual funded levels for those years.

Table 3-9 Service Training Range Sustainment Funding ($M)

Service*	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019
Army	**Actual**	**Requested**	**Requested**	**Requested**	**Requested**	**Requested**
Modernization & Investment	$98.4	$18.8	$66.4	$71.2	$45.2	$121.1
Operation & Maintenance	$303.8	$380.0	$355.4	$359.8	$358.2	$356.5
Environmental	$452.9	$480.2	$440.0	$497.1	$560.5	$543.5
Encroachment	$19.5	$14.8	$10.9	$11.1	$11.3	$11.6
Army Total	**$874.6**	**$983.8**	**$872.7**	**$939.2**	**$975.2**	**$1,032.7**
Marine Corps						
Modernization & Investment	$2.2	$0.0	$4.9	$6.9	$7.2	$7.4
Operation & Maintenance	$68.1	$77.3	$77.4	$80.0	$80.5	$82.8
Environmental	$14.7	$13.1	$7.9	$12.8	$12.7	$12.8
Encroachment	$13.6	$13.8	$14.1	$14.6	$15.1	$15.7
Marine Corps Total	**$98.6**	**$104.2**	**$104.3**	**$114.3**	**$115.5**	**$118.7**
Navy						
Modernization & Investment	$71.0	$67.1	$76.6	$68.2	$76.4	$78.0
Operation & Maintenance	$171.4	$158.3	$167.7	$178.1	$179.9	$184.0
Environmental	$46.3	$42.3	$30.6	$32.5	$31.4	$31.6
Encroachment	$21.3	$21.7	$22.2	$22.7	$23.0	$23.3
Navy Total	**$310.0**	**$289.4**	**$297.1**	**$301.5**	**$310.7**	**$316.9**
Air Force						
Modernization & Investment	$66.9	$36.1	$40.9	$36.9	$41.3	$62.3
Operation & Maintenance	$211.9	$250.6	$296.3	$292.8	$301.2	$308.2
Environmental	$24.3	$19.4	$20.0	$20.6	$21.2	$21.9
Encroachment**	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Air Force Total	**$303.1**	**$306.1**	**$357.1**	**$350.4**	**$363.7**	**$392.3**
OSD						
REPI Program	***$60.4	**$43.6**	**$34.4**	**$35.7**	**$36.4**	**$36.4**
DoD						
DoD Total	**$1,646.7**	**$1,637.1**	**$1,665.6**	**$1,741.1**	**$1,801.5**	**$1,897.0**

** Range sustainability programs are fully represented in the Military Services' programming and budgeting processes. Program fluctuations generally reflect best alignment of available resources across competing Military Service priorities based on programming guidance and validated by the Service Chiefs and Department Secretaries.*

*** The Air Force tracks SRI-related funding through two channels (A3 and A4) and do not precisely sync with how the SRR defines the four categories. As a result, the Air Force is unable to report on Encroachment funds, as defined in the SRR.*

****USD(P&R) contributed approximately $30M in end of year funding to the REPI Program in FY2014.*

Starting with the 2010 SRR, REPI program funds, which are centrally managed by OSD, have been broken out separately from Military Service encroachment funding for more accurate reporting. REPI funds support buffer initiatives across the Military Services and are allocated by OSD to the Military Services based on a competitive selection process that considers an assessment of threats, needs, and military priorities. Any Military Service funds budgeted for buffer projects are captured in that Military Services' encroachment lines.

Table 3-10 outlines Military Service explanations for fluctuations of 10 percent or greater from one year to the next. Funding requirements for range sustainability efforts are fully represented in the Military Services' programming and budgeting processes. Program fluctuations often reflect the choices Military Service Chiefs and Department Secretaries have to make in accepting risk and balancing their total portfolios across competing priorities in a fiscal environment that continues to increase in austerity. The reasons for those fluctuations and their impacts are highlighted in the table below.

Table 3-10: Funding Fluctuation Explanation

Military Service	Modernization & Investment	Operations & Maintenance	Environmental	Encroachment
Army	Fluctuations are attributed to range construction project delays and related adjustments in targetry requirements.	Because of recently increased focus on Training Support Systems (TSSs) by Chief of Staff of the Army, the range O&M programs are much better postured starting in FY2015.	Fluctuations are attributed to Army reprioritization of resources in FY2015 that address several unmet needs from the Budget Control Act year of FY2014. The program years of FY2016-2019 represent available resources as the force size is reduced.	Different criteria were used when evaluating encroachment mitigation for the FY2016-2020 POM resulting in a reduced critical requirement of approximately $4M between FY2015 and FY2016.
Marine Corps	Fluctuations are driven by prioritization and acceptance of certain funding levels of risk among competing priorities within the overall Marine Corps portfolio. As the Marine Corps is still assessing the spectrum of potential courses of action in a changing fiscal environment, the exact impact on future range capabilities and capacities is unknown.	O&M resources are relatively stable given the overarching fiscal environment.	FY2014 execution includes $5M Budget Line Increase for Conservation of Ranges. Budget reduction in FY2016 is based on competing priorities, with cuts balanced across numerous program elements within the Corps. Future FY budget amounts are stable.	Encroachment funding is relatively stable given the overarching fiscal environment.
Navy	Decrease in FY2015 and FY2017, and follow-on increases in resources are due to planned program procurement to given inventory levels, POM guidance, and overarching service priorities.	O&M resources are relatively stable given the overarching fiscal environment. Decrease in FY2015 reflects the many challenges the Navy met in supporting readiness priorities for deploying forces.	The decline beginning in FY2016 was due to a concentrated, deep-dive effort to separate Range Environmental Compliance from Environmental Compliance for accurate reporting of both Range Sustainment and Environmental Compliance.	Encroachment resources remain relatively stable.
Air Force	Fluctuations are based on R&D efforts focused on pod encryption and increased threat capabilities.	Positive fluctuation in FY2016 is an error in the Reimbursable Budget Authority line. Air Force plans to fix this error during the FY2017 POM. Funding is adequate to meet current mission requirements.	Negative fluctuation in FY2015 is due to competition for resources among O&M programs on the integrated priority list (IPL). Funding data for FY2016 and beyond is a projection based on the FY2015 IPL with a small inflation factor.	The Air Force is unable to report on Encroachment as defined in the SRR; however, a portion of OSD's REPI funding line item is Air Force related.

3.3 DEFENSE READINESS REPORTING SYSTEM-RANGE ASSESSMENT MODULE

The Defense Readiness Reporting System – Range Assessment Module (DRRS RAM) provides the means to manage and report on the readiness and capability of military ranges. The DRRS RAM is intended to better integrate range assessments and readiness issues and is consistent with the NDAA Section 366(b) requirement to improve readiness reporting by reflecting the training and readiness impacts caused by constraints on the use of military lands, marine areas, and airspace. The DRRS RAM will be updated to include data from the 2015 SRR range assessments.

3.4 THE READINESS AND ENVIRONMENTAL PROTECTION INTEGRATION PROGRAM

The REPI Program works to protect the military's ability to accomplish its training, testing, and operational missions by helping relieve or avoid land-use conflicts near military installations through buffers projects; preserving off-installation habitat to address Endangered Species Act regulations that restrict use of DoD training and testing lands; and supportive education, engagement, and regional planning efforts. Through the REPI Program, DoD works with stakeholders to find solutions to military-community-environmental encroachment issues, in particular by supporting cost-sharing agreements between the Military Services and private conservation organizations or state and local governments to maintain compatible land uses and preserve habitats around military installations.

These unique partnerships, authorized by Congress (10 U.S.C. § 2684a) in 2002, acquire easements or other interests in land from willing sellers to preserve compatible land uses and sustain wildlife habitat near installations and ranges where the military tests, trains, and operates. By acting proactively, the REPI Program protects investments made during the previous decade modernizing and building range infrastructure and other training, testing, and operating assets, while avoiding spending on more costly alternative approaches to training or mission relocations.

OSD manages the REPI Program to provide DoD policies, standards, and oversight and to administer congressional funding for authorized projects. In addition, REPI supports stakeholder engagement activities and participates in large landscape partnerships, as well as working to integrate various tools to enhance mission-supporting partnerships. It is a critical component of DoD's SRI. In light of ongoing budget constraints across DoD and for REPI partners—private and government alike—the REPI Program is pursuing a number of initiatives to create greater value and provide greater flexibility to trainers, testers, and operators.

SENTINEL LANDSCAPES

One of the REPI Program's newest and high profile initiatives is the Sentinel Landscapes Partnership with the U.S. Department of Agriculture (USDA) and the DOI. Sentinel Landscapes are places where preserving the working and rural character of key landscapes strengthens the economies of farms, ranches, and forests; conserves habitat and natural resources; and protects vital test and training missions conducted on military installations that anchor such landscapes. The Sentinel Landscapes Partnership is looking to recognize and incentivize landowners to continue maintaining these landscapes in ways that contribute to the nation's defense.

In 2013, the Partnership announced the first Sentinel Landscape, anchored by JBLM. The JBLM Sentinel Landscape represents a joint prioritization of funding support for the dwindling South Puget grasslands by three federal agencies and the other Sentinel Landscapes partners, including the local sponsor, the Center for Natural Lands Management. In addition to REPI funding, USDA's Natural Resources Conservation Service (NRCS) is helping private landowners through Farm Bill incentive programs and technical support, while the USFWS is working with all private landowners to provide regulatory certainty and conserve rare species. The JBLM partnership has demonstrable benefits:

- A REPI award of $3.5 million to leverage partner funding almost 2.5:1 to help restore and protect more than 2,600 acres of prairie habitat
- A debit-credit methodology tool, the Prairie Habitat Assessment Methodology, to quantify credits and debits resulting from impacts to and restoration of prairie habitat in Thurston County.

In the meantime, the Sentinel Landscapes Federal Coordinating Committee, stood up to oversee and coordinate program efforts, continues to review a

number of opportunities that also reflect the goals and spirit of the Sentinel Landscapes.

THE 2014 REPI CHALLENGE

In its third year, the 2014 REPI Challenge continues to reveal partner excitement and desire to innovate to protect valuable lands that support training, testing, and operations. In 2014, 11 proposals revealed over $48 million in potential partner funding at a greater than 1:1 match to REPI funding to protect over 140,000 acres across nine states. As the REPI Challenge proposals show, the REPI Program is helping to change the scale and practices of land conservation across the U.S.

The REPI Program designed the REPI Challenge to protect large parcels of land and leverage greater partner cost-share to better benefit the military, the taxpayer, and the environment. For 2014, the REPI Challenge sought proposals that advance and promote the goals and spirit of the Sentinel Landscapes Partnership. Of the 11 finalists, the two projects at Fort Huachuca and NAS Patuxent River rose above and beyond.

Fort Huachuca is working with a coalition of partners, including NRCS and the BLM, to reduce land and water development on 5,900 acres of ranchland, ensuring the availability of scarce groundwater resources for the installation and the surrounding community. A REPI Challenge grant of $4 million will leverage just over $9 million in partner contributions. This buffer protects over 160,000 annual air operations and reduces proliferation of electromagnetic interference for 800 square miles of airspace.

Meanwhile, NAS Patuxent River is working across multiple states to protect a corridor along the Nanticoke River under the Atlantic Test Range airspace heavily used by planes for research, development, test, and evaluation missions. A REPI award of $1 million will leverage more than $5 million in contributions from this cohesive partnership to protect 2,259 acres of forests, wetlands, and farmland, as part of a broader 8,500-acre wildlife corridor area. The project helps reduce noise and safety concerns and prevents costly training and testing restrictions and delays.

OFF-INSTALLATION REGULATORY SOLUTIONS

The REPI Program is also looking at innovative ways to use the various authorities Congress has provided DoD to address the Department's ESA obligations off of our military installations. To that end, the Department is currently working with the Southeast Region of the USFWS to develop a model process that would encourage military installations to contribute to habitat management and enhancement projects on private, state, and other federal agency lands, in return for greater regulatory predictability concerning the need for any future ESA-related restrictions on DoD lands. Although it only just started, it is believed that this initiative holds promise to help ensure the availability of DoD's installations for critical military testing and training, now and into the future.

3.5 REGIONAL PARTNERSHIPS

DoD continues to serve as a key partner in two multistate, multiagency regional partnerships in rapidly growing areas of the country with significant military activity: SERPPAS and WRP. DoD engages in these partnerships to find ways to work across boundaries, both organizational and geographic, to explore innovative solutions and leverage resources to address increasingly complex national defense, land management, and environmental issues. By linking efforts, both of these partnerships provide a mechanism for senior policy-level federal, state, and tribal leaders to identify and develop solutions to common and emerging challenges. This type of collaborative partnering on a broader scale and scope helps to avoid duplicating work, encourages sharing best practices, and maximizes value to the taxpayer.

As a result of SERPPAS and WRP, DoD has established and maintained new relationships, educated partners about the military's mission and priorities, and connected ideas and resources among these stakeholders. More specifically, these partnerships have brought together various stakeholders that operate on the same landscape and compete for resources to address particular shared cross-boundary issues that link military readiness, conservation, and local economies through a common collaborative framework. These relationships now have the ability to help prevent, or at least mitigate, future threats to the military mission.

3.6 OFFICE OF ECONOMIC ADJUSTMENT COMPATIBLE USE PROGRAM

The Office of Economic Adjustment's (OEA) Compatible Use Program is the only program of direct federal assistance to help states and communities work with the Military Services to prevent and mitigate impacts where civilian community encroachment impairs the use of installations and ranges. Technical and financial assistance is available through a JLUS to partner with

the local military installation to plan and carry out strategies promoting compatible civilian use adjacent to an installation complex, including related ranges, SUA, and associated MTRs and military operations areas (MOAs).

Through the community-driven JLUS planning process, adjacent communities and often the state, in partnership with the installation, identify and evaluate a wide range of both existing and potential future encroachment challenges that may impair the continued operational utility of the military installation complex. The affected communities then develop a strategic action plan to identify specific actions, responsible parties, a proposed timeline, and possible funding sources to address the encroachment challenges.

More than 70 JLUS projects currently are underway across the country to remedy encroachment and promote compatible civilian development. Some examples of current JLUS projects that include ranges are NAS Fallon and Seymour Johnson Air Force Base (AFB), including the Dare County Range.

- **NAS Fallon, Nevada.** NAS Fallon, located in Churchill County, prepares all Navy Carrier Air Wings for operational deployment, and is home to the NSAWC, which combines the functions of the Navy Fighter Weapons School (TOPGUN), Carrier Airborne Early Warning Weapons School (Top Dome), the Naval Strike Warfare Center, and VFC-13 (an adversary squadron). In response to a 2011 DON nomination, Churchill County agreed to sponsor a JLUS, building upon previous conservation buffer efforts through the REPI Program. The JLUS engages a partnership among the City of Fallon, State of Nevada, DOI BLM and Bureau of Reclamation (BOR), and the counties of Mineral, Nye, Pershing, Eureka, Washoe, Lander, and Lyon. To date, 46 compatibility issues across 19 categories have been identified in the draft JLUS, and strategies will evolve to address these issues. Federal land management planning efforts are integrated into the JLUS scope of work to ensure coordination with the BLM and BOR, given the significant presence of federally owned and managed land within the FRTC. Churchill County currently projects completion of the JLUS in early 2015.
- **Seymour Johnson AFB, North Carolina.** In 2013, the Air Force nominated Seymour Johnson AFB, including the Dare County Range and associated MTRs and MOAs, as a JLUS candidate. Because of its unique location near the Hampton Roads area, adjacent airspace, and the multitude of Air Force, Navy, and other users, the Dare County Range is in high demand and serves as a valuable operational and training asset. The Air Force's greatest encroachment concerns are related to the Dare County Range and associated MTRs and MOAs, which are critical to Seymour Johnson's F-15E Strike Eagle mission. Seymour Johnson is home to the Air Force's only F-15E Formal Training Unit, conducting 100 percent of the Air Force's F-15E basic qualifications, re-qualification, and transition training. Consequently, Dare County Range is the only low-level range that supports F-15E training. Encroachment, specifically wind turbine development, could have a significant impact on the ability of the installation to meet F-15E training mission needs. The North Carolina Department of Commerce serves as the JLUS project sponsor in cooperation with other state agencies and the communities most directly affected by military operations—the counties of Beaufort, Bertie, Dare, Hyde, Tyrrell, Washington, and Wayne, and the cities of Goldsboro and Washington. To ensure coordination with ongoing agriculture preservation, working lands initiatives, conservation buffering, and alternative energy development reviews, the North Carolina Department of Agriculture and Consumer Services and North Carolina Department of Environment and Natural Resources are supporting Commerce's lead role.

3.7 DOD NATURAL RESOURCES PROGRAM

DoD's Natural Resources Program enables military mission-critical training, testing, operations, and other readiness activities by ensuring continued access to realistic habitat conditions, while simultaneously working to sustain our nation's natural heritage. It does this by providing policy, guidance, and oversight of natural resources management activities across the approximately 25 million acres of military land, air, and water resources owned or operated by DoD.

DoD lands are critically important places where our warfighters perform training and testing in order to effectively execute mission requirements. These lands are also home to more threatened, endangered, and at-risk species per acre than any other federal land management agency, including approximately 400 listed as threatened or endangered and over 500 at risk of needing listing protection. In FY2004, Congress amended the ESA to recognize the significant contributions that installation INRMPs

make to promote the recovery of listed species. The amendment states that where the USFWS or the NMFS determines that an INRMP provides a conservation benefit to a species for which critical habitat has been proposed, the USFWS or NMFS need not designate critical habitat on the military lands encompassed by that INRMP. This is because INRMPs provide protections as good as or, often, better than the protections afforded by critical habitat designation. Since the amendment was passed, 53 installations and satellite facilities have used INRMP exclusion based on the amended language, 22 more than once, for 105 total unique species (recent occurrences were primarily for Hawaiian plants). Since 2006, only one installation has used the readiness exclusion [ESA Section 4(b)(2)] which was for two coral species.

Evolving statutory and regulatory drivers, increasing pressures on DoD lands from urban sprawl and other encroachment factors, and increasingly dynamic natural resources conditions exacerbated by climate change, such as fire, drought, storm surge, species decline, wildlife disease, invasive species and more, can and do impact the military's readiness activities. To help alleviate these impacts, Congress amended Section 103(A) of the Sikes Act in FY2009 to authorize the use of cooperative agreements to maintain and improve off-installation natural resources where doing so may relieve or eliminate current or anticipated restrictions on military activities. This provision allows installation commanders to address some portion of their conservation responsibilities—especially those related to ESA-listed and candidate species—by supporting natural resources projects off their installations, resulting in installation land remaining available to support military training and testing. DoD's Natural Resources Program is partnering with DoD's REPI Program to develop collaborative, habitat-based projects that benefit on-installation flexibility by conserving resources outside installation boundaries.

The Natural Resources Program partnership with REPI is not unique. Because no single entity can address the dynamic and growing problems associated with habitat and species conservation on a meaningful scale, the DoD Natural Resources Program has worked closely for many years with state, federal, and non-governmental partners to achieve mutual goals. These collaborative efforts have resulted in meaningful and mutually beneficial outcomes. For example, Navy's extensive efforts to recover populations of the Island Night Lizard (INL) on the islands of San Clemente, San Nicholas, and Santa Barbara, implemented in coordination with the National Park Service and USFWS, resulted in the INL being taken off the endangered species list in 2014; it had been listed since 1977. There are now an estimated 21.3 million INLs on San Clemente Island alone.

3.8 DOD CLIMATE CHANGE INITIATIVES

The foundation for DoD's strategic policy on climate change adaptation began with the publication of the 2010 QDR, which recognized that climate change was a threat to national security. The 2014 QDR reaffirms DoD's position: "The impacts of climate change may increase the frequency, scale, and complexity of future missions, including Defense Support to Civil Authorities (DSCA), while at the same time undermining the capacity of our domestic installations to support training activities."

The third National Climate Assessment, published in May 2014, notes that certain types of weather events have become more frequent and/or intense, including heat waves, heavy downpours, and, in some regions, floods and droughts. Sea levels are rising, oceans are becoming more acidic, and glaciers and arctic sea ice are melting. Scientists predict these changes will continue and even increase in frequency or duration over the next 100 years.

In the 2014 DoD Climate Change Adaptation Roadmap, DoD recognized these climate-related effects are already being observed at installations throughout the U.S. and overseas and affect many of DoD's activities and decisions related to future operating environments, military readiness, stationing, environmental compliance and stewardship, and infrastructure planning and maintenance.

Specifically, climate change is predicted to affect DoD installations and range capability in several ways:

- Direct impacts on military installations and operations by limiting the availability and quality of ranges and other lands needed for training operations
- Impacts to low-lying coastal installations and ranges from coastal erosion and inundation due to sea-level rise and storm surge
- Limitations on outdoor training due to projections of more frequent and extreme heat conditions; heat conditions and shifts in precipitation patterns may also intensify the risk of wildfire, which can have direct impacts to fidelity of training ranges

- Increased threats to threatened and endangered species and other federally protected species may affect natural resources management obligations at military installations and ranges.

During the past year, DoD has completed an inventory of all DoD-level directives, instructions and procedures to identify where climate change considerations should be incorporated. DoD screening level vulnerability assessment surveys are underway world-wide. During FY2014, DoD updated its Climate Change Adaptation Roadmap and identified specific actions to support training and testing efforts. DoD's long-standing stewardship of its training and testing lands is articulated through its SRI, installation-level RCMPs, and the REPI Program. As appropriate, DoD will seek refinements to existing processes and develop new climate-specific plans and guidance. DoD will continue to review and, as needed, modify the following to account for climate change adaptation needs:

- The SRI, RCMPs, REPI Program, and OEA's Compatible Use Program
- Training and testing plans, including the location, frequency, and duration of training and testing rotations
- Future BRAC and stationing decisions
- Health surveillance programs, including increased frequency of health monitoring, and adequacy of personnel protective equipment.

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4 EVOLVING SRI CHALLENGES

As DoD's SRI has continued to mature over the last 12 years, range capabilities and encroachment challenges evolve. The following subsections highlight the areas of continuing challenges.

4.1 BUDGET REDUCTIONS IMPACTING RANGE CAPABILITY

Implications from the Budget Control Act of 2011 continue to remain an impediment to DoD and the Military Service's ability to maintain readiness. The decrease in total obligation authority necessitated changes to force structure, current and future readiness, O&M, R&D investments, as well as acquisition programs in competition for DoD appropriations to effectively balance competing requirements across the Department as well as within each Military Service. Coupled with this are congressionally mandated procurement and expenses that further compound fiscal constraints. Each Military Service weighs current versus future readiness in an attempt to achieve an executable POM strategy. The readiness accounts for each of the Military Services are the training enablers that ensure forces are proficient and prepared to deploy for contingencies across the range of military operations, including major combat operations. Continual decrements to these readiness-funding accounts are delaying range modernization plans and negatively impacting range capacity and throughput as range operations support functions are reduced.

4.2 FOREIGN INVESTMENT AND NATIONAL SECURITY

The Department remains focused on the issue of foreign investment in industries located in proximity to military training and testing areas. The potential surveillance and collection capabilities provided to foreign entities through investment in assets near military training and testing equities presents national security and encroachment challenges to DoD. Multiple Military Services have addressed this issue in this year's report, and DoD continues to develop strategies designed to mitigate the impacts to training from foreign investment and national security encroachment.

In 2014, the Government Accountability Office (GAO) released a report evaluating the risk to DoD ranges and installations from foreign investment encroachment and the Department's ability to address these risks. DoD concurred with the recommendations stemming from this report. Specifically, DoD is pursuing opportunities to obtain information related to foreign investment and transactions in proximity to DoD activities from agencies with land and airspace management authority. DoD and BOEM have initiated a pilot project to develop a process that will provide information regarding transactions on submerged lands of the outer continental shelf (OCS). DoD is also considering legislative relief as an avenue to mitigate national security encroachment concerns.

In addition, DoD will develop guidance to plan and conduct a risk assessment of testing and training ranges and installations to assess vulnerabilities and potential impacts from foreign investment. The Navy has started a similar risk assessment process for Navy training and testing areas. The Department will report on progress related to interagency coordination, legislative relief, and internal planning and risk assessment efforts in next year's SRR.

4.3 THREATENED AND ENDANGERED AND CANDIDATE SPECIES

Endangered species management issues remain a significant challenge for DoD. Urbanization and sprawl surrounding installations continue to restrict the available habitat for many species. As a result, much of the remaining habitat for a number of listed and at-risk species exists on military installations. In the Military

Service updates and range assessments earlier in this report, there were specific details on the resources being allocated to species management as well as the challenges the Military Services are facing due to potential training restrictions.

DoD continues to work with the USFWS to address the 251 multi-district litigation candidate species still in need of listing determinations. The USFWS is required by court order to make these determinations by September 2017. As discussed in the previous chapter of this report, DoD is working with the Southeast Region of USFWS to develop a model process that would encourage military installations to contribute to habitat management and enhancement on private, state, and federal lands in return for greater predictability concerning the need for future ESA-related restrictions on DoD lands. This effort is in its early stages but is a promising undertaking that benefits all parties involved.

4.4 DEMAND FOR ELECTROMAGNETIC SPECTRUM

DoD operations—in the air, on land, on and under the sea, in space, and in cyberspace—are fundamentally dependent on use and control of electromagnetic spectrum. It is essential that training capture the use of spectrum dependent systems (SDS) and capabilities, ensuring warfighting capabilities are honed and that warfighters are proficient in the associated TTP. All joint functions, such as movement and maneuver, fires, command and control, intelligence, protection, sustainment, and information, are accomplished with systems that use spectrum. The safety and security of U.S. citizens, the effectiveness of U.S. combat forces, and the lives of U.S. military members, allies, and noncombatants depend on spectrum access more than ever before.

Electromagnetic spectrum control continues to be a challenging issue. With the November 2014 auction of additional spectrum previously assigned for DoD training use, the Department is being aggressive in its approach to spectrum dependent training systems, their development and spectrum related technologies. As outlined in the recently published DoD Electromagnetic Spectrum Strategy, the Department is focusing on spectrum efficiency, flexibility, and adaptability to accelerate the fielding of technologies that enable spectrum sharing and improve access opportunities. Specific to training, a new waveform with the potential to cohabit with LTE Cellular applications is being developed. With appropriate lab and live air demonstration, it will with NTIA approval, be able to operate simultaneously with LTE users on the same assigned spectrum without exceeding acceptable levels of interference to either system.

DoD systems will become more spectrally efficient, flexible, and adaptable, and DoD spectrum operations will become more agile to increase the opportunities available to mission planners. This includes many factors, such as increasing the operating frequency range of systems; increasing the ability to share spectrum with other systems (domestic or foreign, federal or non-federal); amending DoD processes pertaining to spectrum use; increasing the speed of system adaptation; becoming more tolerant of interference; and developing near-real-time spectrum operations that integrate spectrum management and training operations.

4.5 CONTINUED GROWTH IN DOMESTIC USE OF UNMANNED AERIAL SYSTEMS

In recent years UASs have been widely used to perform a variety of overseas military missions including collecting critical intelligence data, taking lethal action, and enhancing situational awareness. Current UAS capabilities exist across a broad spectrum, ranging from small systems (e.g., Raven, Dragon Eye, and Pointer), through "tactical"-level systems (e.g., Shadow, Hunter), theater-level systems (e.g., Predator), and finally up to the national-level systems (e.g., Global Hawk). With overseas contingency operations winding down, these systems are returning to the U.S. in large numbers, creating a strong demand for suitable training ranges and adequate airspace.

The primary purpose of domestic UAS training and exercises is for DoD forces to conduct realistic training in their core mission areas. Since domestic UAS training presents unique legal, privacy, and coordination issues, the use of these systems must be in accordance with standing DoD regulations and policy. This includes applicable laws, regulations, and agreements concerning UAS operations in the National Airspace System (NAS), which reflect extensive consultation between the DoD and the FAA. Currently the OSD is the approval authority for all domestic Homeland Defense, DSCA, and National Guard state support UAS operations, including DoD UAS operated by National Guard personnel in Title 32 or State Active Duty status.

The proximity of military training areas to the FAA-controlled NAS remains a problem. According to a recent RAND study, the unique limitations of UASs

pertaining to operations in the NAS can make integration into home station training difficult. Currently, UASs can only operate in restricted military airspace or in the NAS with certificates of authorization from the FAA. DoD is exploring ways to increase stateside training with UASs while minimizing the impact on the NAS. Part of this effort involves expanding the amount of restricted airspace located near units flying small-sized UASs that have limited range and flight duration. As more restricted airspace becomes available to these units, access to the NAS becomes less of a requirement. Additionally, for those units employing larger UAS platforms (with greater range and loiter ability), less-cumbersome procedures for gaining access to the NAS must be adopted in order to facilitate training opportunities.[1]

Recent developments that show promise to enhance domestic training with UASs are the ground based sense and avoid (GBSAA) and airborne sense and avoid technologies. These technologies are designed to open up regions of civil airspace for properly equipped UASs by allowing them to operate safely in accordance with the FAA's mandate to "do no harm." It would also allow them to operate without requiring certificates of authorization to be issued. After several successful demonstrations of GBSAA, the Army is planning to equip a number of its UAS training bases with this technology in order to extend current military airspace into adjoining civil airspace. By doing this, the Army hopes to increase its UAS training capacity by 2015. Moreover, even though the Army is leading the development of GBSAA, this technology is designed for use by all the Military Services.[2]

4.6 EARLY COORDINATION WITH RENEWABLE ENERGY INDUSTRY

In previous SRRs, DoD has highlighted the issue of encroachment due to wind energy development and the substantial impacts to ranges and training capability this can create. While DoD and the renewable energy industry have made progress with wind energy planning and siting in compatible areas, significant challenges due to renewable energy development remain. Project proposals continue to increase and the potential for conflict with military activities is still a major concern.

Many of the challenges and impacts of renewable energy siting in proximity to DoD ranges and operating areas can be addressed early in the process. Early discussion and consultation with DoD greatly improves the chances for compatible siting of renewable energy projects and avoidance or successful mitigation of impacts to military training and readiness. Project developers should engage DoD as early as possible time in the development process to gauge the compatibility of their project with military mission activities, radar operations, and range capability. By forgoing early consultation with DoD, developers risk late-notice barriers associated with potential impacts to DoD that can stall projects late in planning and development phases.

In 2013, DoD issued a primer on renewable energy siting considerations in partnership with the Natural Resources Defense Council. This primer is an excellent reference that provides early consultation information and procedures that address compatibility with military training and test requirements. In addition, the DoD Siting Clearinghouse is the focal point for coordination of renewable energy project reviews for projects undergoing the FAA obstruction evaluation process as well as other projects proposed for construction within MTRs or SUA.

4.7 OFFSHORE OIL AND GAS DEVELOPMENT

The Military Services conduct a number of mission readiness activities across multiple areas of the OCS. The Navy uses the airspace, sea surface, sub-surface, and seafloor of the OCS for events ranging from instrumented equipment testing to live-fire exercises. The Air Force conducts flight training and systems testing over extensive areas on the OCS. Marine Corps amphibious warfare training extends from offshore waters on to the beach and inland. The OCS provides unique training and range capability resources critical to DoD testing, training and operations.

In ongoing partnership with the DOI and BOEM, DoD continues to evaluate energy resource development on the OCS for potential impacts to military readiness. Recently, the Office of the Deputy Assistant Secretary of Defense (Readiness) and representatives from the Military Services entered into planning discussions with the BOEM Office of Strategic Resources related to the 2017–2022 Oil and Gas Lease Sale Program. DoD will conduct a comprehensive analysis of mission compatibility with offshore oil and gas development in

[1] *Rostker, Bernard D. [and ten others] (2014). Building Towards a UAS Training Strategy (Report No. RR-440-OSD). Washington D.C.: RAND National Defense Research Institute. 34-5.*

[2] *Rostker, 40-1.*

the planning areas included in the 2017–2022 draft proposed program. The assessment will build on DoD experience with the 2012–2017 OCS lease sale plan and on ongoing work with BOEM's offshore renewable energy state task forces.

4.8 DOD'S LONG-TERM SRI OUTLOOK

Realistic live training for our warfighters is fundamental to the successful defense of our nation and our national interests. Sustaining effective live training will continue to challenge the Department during this period of constrained budgets, rapidly evolving military capabilities, competition for the land, sea, air, and frequency spectrum resources, and emerging and evolving threats. Simulation can provide meaningful training, but ultimately live training is required to sustain military readiness and DoD ranges must continue to provide the capacity and capabilities needed for effective live training. DoD's training ranges are national assets where our warfighters prepare to go in harm's way by training as they will fight, in both heat and cold, in mud and dust, in the dark at night, and in all the real environmental conditions where they are expected to conduct their mission. Current and future military readiness is built on our ranges and we must sustain these national assets, as there are no alternatives to realistic live training. The Department also remains committed to being good stewards to the land entrusted to us by the citizens of the United States.

A INVENTORY OF RANGES AND RANGE COMPLEXES, SPECIAL USE AIRSPACE, AND MILITARY TRAINING ROUTES

Table A-1: Range and Range Complex Inventory 393

Table A-2: Special Use Airspace Inventory 415

Table A-3: Military Training Route Inventory 451

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Table A-1 Range and Range Complex Inventory

Military Service	Range/Range Complex	United States (US) or Overseas (OS)	State or Country	Command/ Component	Range Description				Range Type										
					Land Area for Ranges (acres)	Special Use Airspace (sq nm)	Sea Surface Area (sq nm)	Underwater Tracking Area (sq nm)	Air-to-Air or Air-to-Surface	Air-to-Ground	Land Maneuver	Land Impact Area	Land Firing Range	C2W/EW	Ocean Operating Area	MOUT	Instrumented Underwater Tracking Range	Amphibious Area	Other
Army	89TH RSC Mead WET Site	US	NE	USARC	1,184	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	89TH RSC Sunflower WET Site	US	KS	USARC	84	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	8th Army Korea	OS	Korea	EUSA	9,908	0	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	Aahoaka LTA	US	HI	ARNG	3,042	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Aberdeen Proving Ground	US	MD	AMC	54,046	133	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Airport Training Area	US	ID	ARNG	1,631	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Albuquerque LTA	US	NM	USARC	7	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	American Samoa LTA	US	AS	USARC	79	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Ananhola LTA	US	HI	ARNG	3,321	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Anderson Farm Training Area	US	IL	ARNG	81	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Anniston Army Depot	US	AL	AMC	64	0	0	0	N	N	N	N	Y	N	N	N	N	N	Y
	Ansbach LTA	OS	Germany	USAREUR	820	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Appendorf LTA	OS	Germany	USAREUR	223	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Arden Hills Army Training Site	US	MN	ARNG	1,488	0	0	0	N	N	Y	N	N	N	N	N	N	N	Y
	Area Ockstadt	OS	Germany	USAREUR	198	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Artemus LTA	US	KY	ARNG	534	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Aschaffenburg LTA	OS	Germany	USAREUR	1,345	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Ashkurn Police Range	US	IL	ARNG	4	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Auburn	US	ME	ARNG	143	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Austin Training Property	US	NE, SD	ARNG	412	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	AVN Training Area (Weyerhaeuser)	US	WA	USARC	20,443	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Bamberg Army Airfield	OS	Germany	USAREUR	65	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Bangor Training Center	US	ME	ARNG	159	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Barada LTA	US	NE	ARNG	84	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Barker Dam LTA	US	TX	USARC	2,207	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Barker Dam Training Site	US	TX	ARNG	571	0	0	0	N	N	Y	N	N	N	N	N	N	N	Y
	Baumholder	OS	Germany	USAREUR	27,883	0	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	Beaver Training Area	US	UT	ARNG	657	0	0	0	N	N	Y	N	N	N	N	N	N	N	N

Military Service	Range/Range Complex	United States (US) or Overseas (OS)	State or Country	Command/ Component	Range Description				Range Type										
					Land Area for Ranges (acres)	Special Use Airspace (sq nm)	Sea Surface Area (sq nm)	Underwater Tracking Area (sq nm)	Air-to-Air or Air-to-Surface	Air-to-Ground	Land Maneuver	Land Impact Area	Land Firing Range	C2W/EW	Ocean Operating Area	MOUT	Instrumented Underwater Tracking Range	Amphibious Area	Other
Army	Beckley City Police Range	US	WV	ARNG	2	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	Beech Fork State Park	US	WV	ARNG	12,836	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Belton LTA	US	MO	USARC	177	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Benelux TSC	OS	Belgium	USAREUR	60	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	BG Thomas Baker Training Site	US	MD	ARNG	877	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Biak Training Center	US	OR	ARNG	43,885	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Bidwell Hill	US	CO	ARNG	40	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Big River LTA	US	IL	ARNG	3,204	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Black Mountain	US	NM	ARNG	2,114	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Black Rapids Training Site	US	AK	USARPAC	4,213	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Blackert Farm Training Area	US	IL	ARNG	1,282	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Blanding Armory	US	UT	ARNG	28	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Blossom Point Research Facility	US	MD	AMC	1,569	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Blue Grass Army Depot	US	KY	AMC	14	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Boeblingen	OS	Germany	USAREUR	1,415	0	0	0	N	N	Y	N	Y	N	N	Y	N	N	Y
	Bog Brook/Riley Deepwoods Training Site	US	ME	ARNG	802	0	0	0	N	N	Y	N	Y	N	N	Y	N	N	Y
	Bolivar LTA	US	TN	ARNG	170	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Book Cliffs Rifle Range	US	CO	ARNG	346	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	Box Butte Reservoir LTA	US	NE	ARNG	13	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Breitenwald	OS	Germany	USAREUR	234	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Brettons Wood Biathlon Range	US	NH	ARNG	1	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	Buckeye Training Site	US	AZ	ARNG	1,475	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Buckley ANG Base, CO	US	CO	ARNG	10	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Buckman	US	FL	ARNG	73	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Bucksnort Gun Club	US	MO	ARNG	10	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	Bug LTA	OS	Germany	USAREUR	110	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Buhl Training Site	US	ID	ARNG	165	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Bullville Usarc	US	NY	USARC	149	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Burgebrach LTA	OS	Germany	USAREUR	249	0	0	0	N	N	Y	N	N	N	N	N	N	N	N

Military Service	Range/Range Complex	United States (US) or Overseas (OS)	State or Country	Command/ Component	Range Description				Range Type										
					Land Area for Ranges (acres)	Special Use Airspace (sq nm)	Sea Surface Area (sq nm)	Underwater Tracking Area (sq nm)	Air-to-Air or Air-to-Surface	Air-to-Ground	Land Maneuver	Land Impact Area	Land Firing Range	C2W/EW	Ocean Operating Area	MOUT	Instrumented Underwater Tracking Range	Amphibious Area	Other
Army	Camel Tracks Training Site	US	NM	ARNG	8,349	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Cameron Pass	US	CO	ARNG	45,395	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Camp Adair	US	OR	ARNG	444	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Camp Ashland	US	NE	ARNG	1,044	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Camp Atterbury	US	IN	ARNG	33,778	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Camp Barkeley	US	TX	ARNG	980	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Camp Beauregard	US	LA	ARNG	12,641	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Camp Blanding	US	FL	ARNG	69,080	0	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	Camp Bowie	US	TX	ARNG	8,932	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Camp Butner	US	NC	ARNG	4,590	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Camp Clark	US	MO	ARNG	1,067	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Camp Crowder	US	MO	ARNG	4,153	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Camp Curtis Guild	US	MA	ARNG	638	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Camp Darby	OS	Italy	USAREUR	0	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Camp Davis	US	ND	ARNG	82	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Camp Dawson	US	WV	ARNG	10,038	0	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	Camp Edwards	US	MA	ARNG	14,483	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Camp Fogarty Training Site	US	RI	ARNG	10,517	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Camp Fowler	US	IN	ARNG	43	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Camp Fretterd	US	MD	ARNG	399	0	0	0	N	N	Y	N	N	N	N	N	N	N	Y
	Camp Grafton	US	ND	TRADOC	9,869	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Camp Grayling	US	MI	ARNG	142,565	8,680	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Camp Gruber	US	OK	ARNG	48,440	0	0	0	N	N	Y	N	Y	N	N	Y	N	Y	Y
	Camp Guernsey	US	WY	ARNG	87,348	46	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	Camp Hale	US	CO	ARNG	21,483	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Camp Hartell	US	CT	ARNG	27	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Camp Humphreys	OS	Korea	EUSA	50	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	Camp Johnson	US	VT	ARNG	642	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Camp Keyes TS	US	ME	ARNG	1	0	0	0	N	N	N	N	N	N	N	N	N	N	Y

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Army	Camp Lakota TA	US	IL	ARNG	1,507	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Camp Luna	US	NM	ARNG	132	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Camp Mabry	US	TX	ARNG	202	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Camp Mackall	US	NC	FORSCOM	211,358	0	0	0	N	N	Y	N	N	N	N	N	N	N	Y
	Camp Maxey	US	TX	ARNG	6,546	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Camp McCain	US	MS	ARNG	12,418	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Camp Merrill	US	GA	TRADOC	338,996	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Camp Minden	US	LA	ARNG	14,762	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Camp Murray	US	WA	ARNG	98	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Camp Navajo	US	AZ	ARNG	27,888	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Camp Niantic	US	CT	ARNG	42	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Camp Perry	US	OH	ARNG	7,118	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Camp Rilea	US	OR	ARNG	4,262	0	0	0	N	N	Y	Y	Y	N	Y	N	N	Y	Y
	Camp Ripley	US	MN	ARNG	50,831	0	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	Camp Roberts	US	CA	ARNG	40,981	64	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Camp Robinson	US	AR	ARNG	30,864	0	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	Camp San Luis Obispo	US	CA	ARNG	5,032	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Camp Santiago	US	PR	ARNG	12,364	0	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	Camp Seven Mile	US	WA	ARNG	340	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Camp Shelby	US	MS	ARNG	133,451	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Camp Sherman	US	NC	ARNG	430	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	N
	Camp Smith	US	NY	ARNG	1,489	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Camp Stanley Storage Activity	US	TX	AMC	162	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	Camp Swift	US	TX	ARNG	11,716	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Camp Varnum	US	RI	ARNG	18	0	0	0	N	N	Y	N	N	N	N	N	N	N	Y
	Camp Villere	US	LA	ARNG	1,454	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Camp Williams	US	UT	ARNG	23,660	0	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	Camp Wismer	US	WS	ARNG	3,311	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Camp Withycombe	US	OR	ARNG	171	0	0	0	N	N	Y	N	N	N	N	N	N	N	Y

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Army	Campo Pond TA	OS	Germany	USAREUR	252	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Cao Malnisio	OS	Italy	USAREUR	4,099	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Casa Grande Training Site	US	AZ	ARNG	799	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Casper Armory	US	WY	ARNG	27	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Caswell Training Site	US	ME	ARNG	1,065	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	N
	Catoosa Volunteer Training Site	US	TN	ARNG	1,508	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Cellina-Meduna	OS	Italy	USAREUR	14,306	81	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Chatfield Reservoir	US	CO	ARNG	2,318	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Clarks Hill TS	US	SC	ARNG	920	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Clinton Training Site	US	PA	USARC	154	1	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Coeur Dalene Airport	US	ID	ARNG	66	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Colorado Springs Training Site	US	CO	ARNG	310	0	0	0	N	N	N	N	Y	N	N	N	N	N	Y
	Conn Barracks	OS	Germany	USAREUR	52	0	0	0	N	N	N	N	Y	N	N	N	N	N	Y
	Cornhusker AAP	US	NE	USACE	6	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	Cpt. Euripides Rubio Jr. Center	US	PR	USARC	51	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Crab Orchard TA	US	IL	ARNG	294	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Crab Orchard TA Annex	US	IL	ARNG	1	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Dawson Farm Airport	US	IL	ARNG	14	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	De Bremond Training Center	US	NM	ARNG	1,325	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Deepwoods Training Site	US	ME	ARNG	70	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Defense Distribution Depot Susquehanna	US	PA	AMC	0	0	0	0	N	N	N	N	Y	N	N	N	N	N	Y
	Deseret Chemical Depot	US	UT	AMC	552	0	0	0	N	N	N	N	Y	N	N	N	N	N	Y
	Dillingham MIL RES	US	HI	USARPAC	449	0	0	0	N	N	Y	N	N	N	N	N	N	N	Y
	Dixon Parking Area	US	IL	ARNG	6	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Dona Ana Range Camp	US	NM	ARNG	63	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Donnelly Training Area	US	AK	ARNG	631,324	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Douglas Training Site	US	AZ	ARNG	990	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Duffield Industrial Park	US	VA	ARNG	74	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Dugway Proving Ground	US	UT	ATEC	372,956	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y

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Army	DZ Babich	US	MD	ARNG	113	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	DZ Beech Hill	US	WV	ARNG	189	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	E Moline Corrections Center Range	US	IL	ARNG	103	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Eagle Mountain Lake Training Site	US	TX	ARNG	1,246	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	East Haven Rifle Range	US	CT	ARNG	113	0	0	0	N	N	Y	Y	N	N	N	N	N	N	Y
	East Stroudsburg Armory	US	PA	ARNG	11	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Eastern Kentucky Gun Club	US	KY	ARNG	2	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Ederle	OS	Italy	USAREUR	0	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Edgemeade TS Mtn Home	US	ID	ARNG	132	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Eglin AFB (ALARNG)	US	FL	ARNG	33,207	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Eklutna Glacier TS	US	AK	USARPAC	33	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Elgin Police Range	US	IL	ARNG	1	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Ernie Pyle Usarc/Amsa #12 (G)	US	NY	USARC	1	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Ethan Allen Firing Range	US	VT	ARNG	10,941	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	FAA Radio Tower Site	US	CO	ARNG	13	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Fahr River Crossing	OS	Germany	USAREUR	0	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Felicity	US	OH	ARNG	1	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Five Mile Training Area	US	IL	ARNG	856	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Florence Training Site	US	AZ	ARNG	18,855	61	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	Floyd Edsal Training Center	US	NV	ARNG	1,533	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Foce del Reno	OS	Italy	USAREUR	8,941	0	0	0	N	N	N	Y	Y	N	N	N	N	N	N
	Foce Fume Serchio	OS	Italy	USAREUR	163	0	0	0	N	N	N	Y	Y	N	N	N	N	N	N
	Fontaniva	OS	Italy	USAREUR	155	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Fort A.P. Hill	US	VA	MDW	72,596	928	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Fort Allen	US	PR	ARNG	423	0	0	0	N	N	Y	N	N	N	N	N	N	N	Y
	Fort Belvoir	US	VA	MDW	1,567	0	0	0	N	N	Y	Y	N	N	N	N	N	N	Y
	Fort Benning	US	GA	TRADOC	165,993	422	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	Fort Bliss	US	TX	TRADOC	1,096,593	1,597	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	Fort Bragg	US	NC	FORSCOM	211,358	1,718	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y

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Army	Fort Campbell	US	KY, TN	FORSCOM	94,914	931	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	Fort Carson	US	CO	FORSCOM	130,318	1,153	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	Fort Chaffee	US	AR	ARNG	64,464	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Fort Custer Training Center	US	MI	ARNG	7,499	0	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	Fort Devens	US	MA	USARC	4,633	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Fort Dix	US	NJ	USARC	28,505	104	0	0	N	N	N	Y	Y	N	N	N	N	N	Y
	Fort Drum	US	NY	FORSCOM	101,457	299	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	Fort Eustis/Fort Story	US	VA	TRADOC	6,625	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Fort George G. Meade	US	MD	MDW	134	0	0	0	N	N	Y	N	N	N	N	N	N	N	Y
	Fort Gillem	US	GA	FORSCOM	453	0	0	0	N	N	Y	N	N	N	N	N	N	N	Y
	Fort Gordon	US	GA	TRADOC	51,242	0	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	Fort Greely/Donnelly Training Area	US	AK	USARPAC	631,283	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Fort Hood	US	TX	FORSCOM	199,256	500	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	Fort Huachuca	US	AZ	TRADOC	80,912	815	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	Fort Hunter Liggett	US	CA	USARC	160,846	113	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Fort Indiantown Gap	US	PA	ARNG	15,009	0	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	Fort Irwin	US	CA	FORSCOM	753,579	560	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Fort Jackson	US	SC	TRADOC	33,349	0	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	Fort Knox	US	KY	TRADOC	102,040	113	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	Fort Leavenworth	US	KS	TRADOC	3,435	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Fort Lee	US	VA	TRADOC	2,313	69	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Fort Leonard Wood	US	MO	TRADOC	56,121	175	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Fort Lewis	US	WA	FORSCOM	82,712	0	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	Fort McClellan (Pelham Range)	US	AL	ARNG	22,199	0	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	Fort McCoy	US	WI	USARC	129,436	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Fort McPherson	US	GA	FORSCOM	22	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Fort Meade	US	SD	ARNG	6,265	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Fort Mifflin	US	PA	ARNG	26	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Fort Monmouth	US	NJ	AMC	95	0	0	0	N	N	Y	N	Y	N	N	Y	N	N	Y

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Army	Fort Morgan Airport	US	CO	ARNG	20	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Fort Nathaniel Greene	US	RI	USARC	96	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Fort Pickett	US	VA	ARNG	41,206	161	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	Fort Polk	US	LA	FORSCOM	137,003	5,471	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	Fort Richardson	US	AK	USARPAC	54,161	163	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Fort Riley	US	KS	FORSCOM	92,380	107	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	Fort Rucker	US	AL	TRADOC	61,462	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Fort Ruger	US	HI	USARPAC	312	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Fort Sam Houston/Camp Bullis	US	TX	MEDCOM	27,608	0	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	Fort Sill	US	OK	TRADOC	86,691	153	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	Fort Stewart	US	GA	FORSCOM	272,191	556	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	Fort Wainwright	US	AK	USARPAC	1,575,762	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Fort William Henry Harrison	US	MT	ARNG	6,435	0	0	0	N	N	Y	N	Y	N	N	Y	N	N	Y
	Fort Wingate Missile Launch Complex	US	NM	ATEC	6,526	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	Fort Wolters	US	TX	ARNG	4,046	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Fountain Inn TS	US	SC	ARNG	21	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Fred Allen Training Area	US	IL	ARNG	81	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Freeman Field Police Range	US	IN	ARNG	2	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	Friedberg LTA	OS	Germany	USAREUR	8,910	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Frye Mountain Training Site	US	ME	ARNG	5,136	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Galesburg Hot Fueling LTA	US	IL	ARNG	7	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Gardiner	US	ME	ARNG	112	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Garrison WET Site	US	ND	ARNG	765	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Gerlachshausen Swim Site	OS	Germany	USAREUR	0	0	0	0	N	N	N	N	N	N	N	N	N	N	N
	Gerstle River Training Area	US	AK	USARPAC	20,590	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Giessen Depot Training Area	OS	Germany	USAREUR	142	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Gila Bend Training Site	US	AZ	ARNG	707	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Goodpasture DZ	US	CO	ARNG	179	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Grafenwoehr	OS	Germany	USAREUR	32,782	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y

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Army	Great Bend LTA	US	KS	USARC	1	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Green Creek Training Area	US	IL	ARNG	458	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Green River Launch Complex	US	UT	ATEC	3,960	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	Greenlief Training Site	US	NE	ARNG	3,154	0	0	0	N	N	Y	N	Y	N	N	Y	N	N	Y
	Grossauheim	OS	Germany	USAREUR	0	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Grossostheim LTA	OS	Germany	USAREUR	1,559	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Guilderland	US	NY	ARNG	290	0	0	0	N	N	N	N	Y	N	N	N	N	N	Y
	Gulkana Glacier Training Area	US	AK	ARNG	41	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Gunpowder MIL RES	US	MD	ARNG	230	0	0	0	N	N	Y	N	N	N	N	N	N	N	Y
	Haerr Training Area	US	IL	ARNG	3	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Happy Valley (Carlsbad)	US	NM	ARNG	707	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Haws Crossroads WET Site	US	TN	USARC	195	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Hawthorne Army Depot	US	NV	AMC	35,773	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	N
	Hayden Lake LTA	US	ID	USARC	612	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	Hayford Pit LTA	US	WA	USARC	54	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Hidden Valley LTA	US	KY	ARNG	535	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Hilltop Range	US	IN	ARNG	1	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	Hobbs	US	NM	ARNG	130	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Hodges TS	US	SC	ARNG	19	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Hofenfels	OS	Germany	USAREUR	38,933	0	0	0	N	N	Y	N	Y	N	N	Y	N	N	Y
	Hollis Plains Training Site	US	ME	ARNG	408	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Honopou LTA	US	HI	ARNG	106	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Hooterville Airport LTA	US	IL	ARNG	4	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Horsetooth Reservoir	US	CO	ARNG	5,034	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Hunter Army Airfield	US	GA	FORSCOM	3,218	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Idaho Falls Training Site	US	ID	ARNG	1,099	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Idaho Launch Complex	US	ID	ATEC	315	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	Ike Skelton Training Site	US	MO	ARNG	27	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y

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Army	Illinois Department of Corrections Training Area	US	IL	ARNG	149	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Illinois State Fair Grounds	US	IL	ARNG	42	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Indiana Range Wet Site	US	PA	ARNG	165	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Industrial Park Training Area	US	IL	ARNG	7	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Iowa AAP	US	IA	AMC	1,347	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Iroquois County Police Range	US	IL	ARNG	5	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Jefferson Proving Ground	US	IN	AMC	1,050	0	0	0	N	N	N	Y	N	N	N	N	N	N	N
	John Sevier Range	US	TN	ARNG	9	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	Joliet Training Center	US	IL	USARC	3,431	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Joseph Baldwin LTA	US	IL	ARNG	70	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Kahuku Training Area	US	HI	USARPAC	9,463	0	0	0	N	N	Y	N	N	N	N	N	N	N	Y
	Kalepa LTA	US	HI	ARNG	903	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Kanaio Training Center	US	HI	ARNG	4,622	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Kansas AAP	US	KS	AMC	107	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Kansas Regional Training Site (Smoky Hill)	US	KS	ARNG	3,430	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Katterbach Kaserne	OS	Germany	USAREUR	0	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Kawailoa Training Area	US	HI	USARPAC	23,527	0	0	0	N	N	Y	N	N	N	N	N	N	N	Y
	Keamuku LTA	US	HI	USARPAC	23,088	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Keaukaha MIL RES	US	HI	ARNG	434	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	N
	Kekaha	US	HI	ARNG	61	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Kekaha LTA	US	HI	ARNG	3,195	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Kelly Canyon TS	US	ID	ARNG	3,826	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Keystone Rifle Range	US	CA	ARNG	174	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Keystone Training Site	US	PA	USARC	452	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Kingsbury LTA	US	IN	USARC	935	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Kink Glacier Training Site	US	AK	ARNG	5,820	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Kunigundenruh LTA	OS	Germany	USAREUR	113	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	La Reforma Training Site	US	TX	ARNG	4,263	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N

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Army	Lake City AAP	US	MO	AMC	696	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Lake Shelbyville TA — Windsor	US	IL	ARNG	1,385	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Lake Shelbyville TA — Findley	US	IL	ARNG	116	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Lampertheim Training Area	OS	Germany	USAREUR	4,143	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Lander Local Training Area	US	WY	ARNG	1,398	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Lawrence Airport Training Area	US	IL	ARNG	77	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Lebanon Readiness Center	US	NH	ARNG	0	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Leeman Field LTA	US	VA	ARNG	24	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Leroy Dilka Land	US	CO	ARNG	2	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Letterkenny Army Depot	US	PA	AMC	11	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	Lexington	US	OK	ARNG	301	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Limestone Hills Training Area	US	MT	ARNG	21,356	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Lincoln Challenge LTA	US	IL	ARNG	90	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Lockport Police Range	US	IL	ARNG	3	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Lone Star AAP	US	TX	AMC	235	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	Longhorn AAP	US	TX	AMC	0	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	Los Alamitos JFTB	US	CA	ARNG	316	0	0	0	N	N	N	N	Y	N	N	N	N	N	Y
	Lovell Local Training Area	US	WY	ARNG	3,606	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	LTA Vaap	US	TN	USARC	103	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Ltc Hernan G. Pesquera Usar Center	US	PR	USARC	4	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Mabe Range LTA	US	VA	ARNG	1,733	0	0	0	N	N	N	N	Y	N	N	N	N	N	Y
	Macon Training Site	US	MO	ARNG	3,093	0	0	0	N	N	Y	N	Y	N	N	Y	N	N	Y
	Mainz-Layenhof	OS	Germany	USAREUR	112	0	0	0	N	N	N	N	N	N	N	Y	N	N	N
	Makua MIL RES	US	HI	USARPAC	4,244	0	0	0	N	N	N	Y	Y	N	N	N	N	N	Y
	Maluhia LTA	US	HI	ARNG	70	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Mankato Local Training Area	US	MN	USARC	12	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Marion County Fairgrounds Training Area	US	IL	ARNG	57	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Marion LTA	US	OH	USARC	57	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Marseilles Training Site	US	IL	ARNG	2,742	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y

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Army	Matoon Police Range	US	IL	ARNG	10	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	McAlester AAP	US	OK	AMC	34,389	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	McCrady Training Center	US	SC	ARNG	21,177	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Mead Training Site	US	NE	ARNG	1,185	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Messell Small Arms Range	OS	Germany	USAREUR	21	0	0	0	N	N	N	N	Y	N	N	N	N	N	Y
	Metamura Police Range	US	IL	ARNG	1	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Metro Airport Training Area	US	IL	ARNG	25	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Michelfeld	OS	Germany	USAREUR	0	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Milan Volunteer Training Site	US	TN	ARNG	2,366	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Mitchell Training Area	US	SD	ARNG	41	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	Mobridge Training Area	US	SD	ARNG	6	0	0	0	N	N	Y	N	N	N	N	N	N	N	Y
	Monte Carpegna	OS	Italy	USAREUR	6,491	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N
	Monte Ciarlec	OS	Italy	USAREUR	7,925	0	0	0	N	N	Y	Y	N	N	N	N	N	N	N
	Monte Romano	OS	Italy	USAREUR	10,039	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Moosehorn	US	ME	ARNG	0	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	MOTSU	US	NC	MTMC	7	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Mountwood Park	US	WV	ARNG	3,117	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	MTA Camp Dodge	US	IA	ARNG	3,725	0	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	MTA SMR CP Pendleton	US	VA	ARNG	118	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	MTA Stead FAC	US	NV	ARNG	373	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	New Castle Rifle Range	US	DE	ARNG	92	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	New River Valley Training Site	US	VA	USARC	72	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Newark LTA, NY	US	NY	ARNG	100	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Newfane WET Site	US	NY	USARC	3	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Newport Chemical Depot	US	IN	AMC	0	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	NGTC at Sea Girt	US	NJ	ARNG	120	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	NH NG Training Site	US	NH	ARNG	91	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Nounou LTA	US	HI	ARNG	1,721	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	NW Steel and Wire LTA	US	IL	ARNG	11	0	0	0	N	N	N	N	N	N	N	N	N	N	Y

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Army	Ocala Armory	US	FL	ARNG	0	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Offersheim Small Arms Range	OS	Germany	USAREUR	1	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Ogden Local Training Area	US	UT	USARC	132	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Old Litchfield Lake Training Area	US	IL	ARNG	152	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Onate Training Site	US	NM	ARNG	79	0	0	0	N	N	Y	N	Y	N	N	Y	N	N	Y
	Orchard (Gowen Field) Training Area	US	ID	ARNG	143,317	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Orchard Mates	US	ID	ARNG	561	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Oxford	US	ME	ARNG	58	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Paisley LTA	US	FL	ARNG	11,300	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Papago Park MIL RES	US	AZ	ARNG	100	0	0	0	N	N	N	N	Y	N	N	N	N	N	Y
	Paris Police Firing Range	US	IL	ARNG	32	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Parks RFTA	US	CA	USARC	2,005	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Pasa Range	US	IL	ARNG	56	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Pau'Uilo LTA	US	HI	ARNG	45	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Peaceful Valley Ranch	US	CO	ARNG	1,210	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Peason Ridge	US	LA	FORSCOM	45,780	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Pecatonica Police Range	US	IL	ARNG	1	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Pekin Corrections Center LTA	US	IL	ARNG	68	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Pesotum Police Range	US	IL	ARNG	1	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Peterborough Readiness Center	US	NH	ARNG	0	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Picacho Training Site	US	AZ	ARNG	99	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Picatinny Arsenal	US	NJ	AMC	4,420	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Pickens TS	US	SC	ARNG	10	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Pierre Training Area	US	SD	ARNG	5	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	Pine Bluff Arsenal	US	AR	AMC	33	0	0	0	N	N	N	Y	Y	N	N	N	N	N	Y
	Pinkneyville Fairgrounds	US	IL	ARNG	66	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Pinon Canyon Maneuver Site	US	CO	FORSCOM	224,427	0	0	0											
	Platte Training Area	US	SD	ARNG	40	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Plymouth Training Site	US	ME	ARNG	316	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y

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Army	Pocatello Airport Local Training Area	US	ID	USARC	14	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Pocatello Training Site	US	ID	ARNG	9	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Podeldorf LTA	OS	Germany	USAREUR	1,162	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Pohakuloa Training Area	US	HI	USARPAC	107,471	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Pontiac Corrections TA	US	IL	ARNG	416	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Pontiac Police Range	US	IL	ARNG	3	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Price Training Area	US	UT	ARNG	159	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Pryor Readiness Center	US	OK	ARNG	585	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	P-Series	OS	Italy	USAREUR	5,290	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Pueblo Chemical Depot	US	CO	AMC	94	0	0	0	N	N	N	N	Y	N	N	N	N	N	Y
	Puu Kapele LTA	US	HI	ARNG	1,110	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Puu Luahine (Red Hill) LTA	US	HI	ARNG	8,326	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Puu Pa LTA	US	HI	ARNG	13,273	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Pu'Unene LTA	US	HI	ARNG	1,614	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Racine County Line Range	US	WI	ARNG	25	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	Raleigh County Firing Range	US	WV	ARNG	1	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	Ramey Usar Center LTA	US	PR	USARC	53	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Ravenna Training and Logistics Site	US	OH	ARNG	6,655	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Raytown Training Site	US	MO	ARNG	51	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Red River Army Depot	US	TX	AMC	32	0	0	0	N	N	N	N	Y	N	N	N	N	N	Y
	Redfield Training Area	US	SD	ARNG	168	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Redstone Arsenal	US	AL	AMC	24,017	25	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Reese Range Complex	OS	Germany	USAREUR	15	0	0	0	N	N	N	N	Y	N	N	N	N	N	Y
	Rheinblick LTA	OS	Germany	USAREUR	45	0	0	0	N	N	N	N	Y	N	N	N	N	N	Y
	Richfield Training Area	US	UT	ARNG	448	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Ridgeway	US	PA	ARNG	8	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Rio Rancho	US	NM	ARNG	96	0	0	0	N	N	N	N	Y	N	N	N	N	N	Y
	Rittenhouse Training Site	US	AZ	ARNG	720	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Riverside	OS	Italy	USAREUR	3	0	0	0	N	N	Y	N	N	N	N	N	N	N	N

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Army	Rivoli Bianchi	OS	Italy	USAREUR	235	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	Rock Falls Industrial Park Training Area	US	IL	ARNG	23	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Ronald Reagan Test Site	US	Marshall Islands	ARNG	462	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Roswell	US	NM	ARNG	5,388	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Rottershausen	OS	Germany	USAREUR	177	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Safford Training Site	US	AZ	ARNG	400	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	San Giorgio	OS	Italy	USAREUR	68	0	0	0	N	N	N	N	N	N	N	Y	N	N	N
	San Juan National Forest	US	CO	ARNG	633,011	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Sand Dunes	OS	Germany	USAREUR	115	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Santa Severa	OS	Italy	USAREUR	100	0	0	0	N	N	N	Y	Y	N	N	N	N	N	N
	Sante Fe AASF	US	NM	ARNG	2	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Schofield Barracks MIL RES	US	HI	USARPAC	9,695	0	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	Schweinfurt	OS	Germany	USAREUR	6,284	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Schwetzingen LTA	OS	Germany	USAREUR	265	0	0	0	N	N	Y	N	N	N	N	N	N	N	Y
	Scranton (Leach Range)	US	PA	AMC	76	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Seagoville LTA	US	TX	USARC	198	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Sheridan Local TA	US	WY	ARNG	3,986	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Sierra Army Depot	US	CA	AMC	4,807	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Sioux Falls Airport Training Area	US	SD	ARNG	1	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Smyrna Volunteer Training Site	US	TN	ARNG	526	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Snake Creek Training Site	US	FL	ARNG	312	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	South Charleston	US	WV	ARNG	2	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	South Hauptsmoor LTA	OS	Germany	USAREUR	268	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Southern Illinois Law Enforcement Training Area	US	IL	ARNG	29	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Sparta	US	IL	ARNG	2,620	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Spirit Lake LTA	US	ID	ARNG	612	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Springfield Police Range	US	IL	ARNG	24	0	0	0	N	N	N	N	N	N	N	N	N	N	Y

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Army	Springfield Training Site	US	IL	ARNG	99	0	0	0	N	N	N	N	Y	N	N	N	N	N	Y
	St. Anthony Training Site	US	ID	ARNG	3,337	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	St. George Training Area	US	UT	ARNG	392	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Stanton LTA	US	NE	ARNG	633	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	State Police Academy, VT	US	VT	ARNG	0	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	Sterling Police Range	US	IL	ARNG	1	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Stewart River	US	AK	ARNG	25,519	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Stones Ranch MIL RES	US	CT	ARNG	1,884	0	0	0	N	N	Y	N	Y	N	N	Y	N	N	Y
	Strasburg DZ	US	CO	ARNG	944	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Summersville NRA Range	US	WV	ARNG	16	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Sunflower Army Ammunition Plant	US	KS	AMC	568	0	0	0	N	N	Y	N	N	N	N	N	N	N	Y
	Sunny Hills LTA	US	FL	ARNG	11,120	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Swanwick LTA	US	IL	ARNG	11	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Swift Acres LTA	US	FL	ARNG	4,198	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Tarlton LTA	US	OH	ARNG	104	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Tiergarten	OS	Germany	USAREUR	250	0	0	0	N	N	Y	N	N	N	N	N	N	N	Y
	Toledo Usarc	US	OH	USARC	29	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Tooele Army Depot	US	UT	AMC	1,457	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	Tosohatchee LTA	US	FL	ARNG	3,434	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Truman Training Site	US	MO	ARNG	657	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	TS NAS Fallon RG B19	US	NV	ARNG	132	0	0	0	N	N	N	N	Y	N	N	N	N	N	Y
	T-Series	OS	Italy	USAREUR	7,223	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	TS-Hawk McConnelsville, OH	US	OH	ARNG	395	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Tucumcari Training Site	US	NM	ARNG	63	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Tullahoma MIL RES	US	TN	ARNG	6,553	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Twin Falls Training Site	US	ID	ARNG	316	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Ukumehame Firing Range	US	HI	ARNG	39	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Ullin Police Range	US	IL	ARNG	2	0	0	0	N	N	N	N	N	N	N	N	N	N	Y

Military Service	Range/Range Complex	United States (US) or Overseas (OS)	State or Country	Command/ Component	Range Description				Range Type										
					Land Area for Ranges (acres)	Special Use Airspace (sq nm)	Sea Surface Area (sq nm)	Underwater Tracking Area (sq nm)	Air-to-Air or Air-to-Surface	Air-to-Ground	Land Maneuver	Land Impact Area	Land Firing Range	C2W/EW	Ocean Operating Area	MOUT	Instrumented Underwater Tracking Range	Amphibious Area	Other
Army	Umatilla Chemical Depot	US	OR	AMC	9	0	0	0	N	N	N	N	Y	N	N	N	N	N	Y
	Vail Tree Farm LTA	US	WA	USARC	166,332	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Van Vleck Ranch	US	CA	ARNG	2,685	0	0	0	N	N	Y	N	N	N	N	N	N	N	Y
	Veienna Corrections Center	US	IL	ARNG	7	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Vermillion Training Area	US	IL	ARNG	350	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Vernal Training Area	US	UT	ARNG	159	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Volkstone	US	WV	ARNG	320	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Wackernheim Small Arms Ranges	OS	Germany	USAREUR	14	0	0	0	N	N	N	N	Y	N	N	N	N	N	Y
	Waco Training Area	US	MT	ARNG	7,960	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Waiawa	US	HI	ARNG	15	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Walker Field Airport	US	CO	ARNG	25	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Wally Eagle DZ	US	CO	ARNG	841	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Wappapello Training Site	US	MO	ARNG	2,046	0	0	0	N	N	Y	N	Y	N	N	Y	N	N	Y
	Warner Barracks	OS	Germany	USAREUR	3	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	Washington County Memorial Usarc	US	OH	USARC	17	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	Watertown Training Area	US	SD	ARNG	1	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	Watkin Armory	US	CO	ARNG	2	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Watkins Range	OS	Korea	EUSA	11	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Weldon Springs	US	MO	ARNG	1,590	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Wells Gulch	US	CO	ARNG	57	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Wendell H. Ford Regional Training Center	US	KY	ARNG	10,770	0	0	0	N	N	Y	Y	Y	N	N	Y	N	N	Y
	West Camp Rapid	US	SD	ARNG	740	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	West Point MIL RES	US	NY	USMA	16,116	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	West Silver Spring Complex	US	WI	USARC	8	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Western Arng Aviation (Waats) Silverbell	US	AZ	ARNG	40	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Westminster	US	VT	ARNG	11	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Wheeler Army Airfield	US	HI	USARPAC	115	0	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Whistler Creek TS	US	AK	USARPAC	543	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	White Sands Missile Range	US	NM	ATEC	2,187,603	0	0	0	N	N	N	Y	Y	N	N	N	N	N	Y

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					Land Area for Ranges (acres)	Special Use Airspace (sq nm)	Sea Surface Area (sq nm)	Underwater Tracking Area (sq nm)	Air-to-Air or Air-to-Surface	Air-to-Ground	Land Maneuver	Land Impact Area	Land Firing Range	C2W/EW	Ocean Operating Area	MOUT	Instrumented Underwater Tracking Range	Amphibious Area	Other
Army	Whitehorse Range	US	WV	ARNG	217	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	Wilcox	US	AZ	TRADOC	28,894	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	Wildcat Hills State Rec. Area TA	US	NE	ARNG	852	7,321	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Williston Wets	US	ND	ARNG	345	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	Wuerzburg	OS	Germany	USAREUR	7	0	0	0	N	N	Y	N	Y	N	N	Y	N	N	Y
	WV DNR Elk River WMA TA	US	WV	ARNG	278	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	WV DNR McClintic WMA TA	US	WV	ARNG	55	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	WV State Police Academy Range	US	WV	ARNG	2	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	Wvdnr Bluestone Wma Range	US	WV	ARNG	1	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	Wvdnr Plum Orchard Wma Range	US	WV	ARNG	3	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	Yakima Training Center	US	WA	FORSCOM	327,233	0	0	0	N	N	Y	Y	Y	N	N	N	N	N	Y
	Youngstown Wets	US	NY	ARNG	850	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	Yuma Proving Ground	US	AZ	ATEC	147,244	1500	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
Marine Corps	MCLB Albany	US	GA	LOGCOM	4	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	MCLB Barstow	US	CA	LOGCOM	2,438	0	0	0	N	N	N	N	Y	N	N	N	N	N	N
	MCAS Beaufort/Townsend	US	SC	MCIEAST	5,182	1,130	0	0	Y	Y	N	Y	Y	N	N	N	N	N	Y
	MCMWTC Bridgeport	US	CA	TECOM	45,217	0	0	0	N	N	Y	N	N	N	N	N	N	N	N
	MCIPAC-MCB Butler	OS	Japan	MCIPAC	47,000	333	0	0	N	N	Y	Y	Y	N	Y	Y	N	N	Y
	MCAS Cherry Point	US	NC	MCIEAST	29,139	1,082	0	0	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
	MCB Hawaii	US	HI	MCIPAC	1,986	0	0	0	N	N	Y	N	Y	N	N	Y	N	Y	Y
	MCB Camp Lejeune	US	NC	MCIEAST	157,253	151	0	0	N	Y	Y	Y	Y	N	Y	Y	N	Y	Y
	MCAS Miramar	US	CA	MCIWEST	14,311	0	0	0	N	N	Y	N	Y	N	N	N	N	N	Y
	MCRD Parris Island	US	SC	TECOM	1,100	0	0	0	N	N	Y	N	Y	N	N	N	N	N	N
	MCB Camp Pendleton	US	CA	MARFORPAC	125,704	180	0	0	N	Y	Y	Y	Y	Y	Y	Y	N	Y	Y
	MCB Quantico	US	VA	MCINCR	55,278	278	0	0	N	Y	Y	Y	Y	N	N	Y	N	N	Y
	MCAGCC Twentynine Palms	US	CA	TECOM	601,151	1,268	0	0	N	Y	Y	Y	Y	Y	N	Y	N	N	Y
	MCAS Yuma/Bob Stump	US	AZ	MCIWEST	1,213,713	7,085	0	0	Y	Y	Y	Y	Y	Y	N	N	N	N	Y

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Navy	Atlantic City	US	NJ	CFFC	0	5,585	4,413	4,413	Y	N	N	N	N	N	Y	N	N	N	N
	Atlantic Test Range (ATR) - Patuxent River	US	MD, VA	NAVAIR	5,700	3,401	330	0	Y	Y	N	Y	N	Y	N	N	N	N	N
	Atlantic Undersea Test and Evaluation Center (AUTEC)	OS	Bahamas	NAVSEA	0	870	1,320	500	Y	N	N	N	N	N	Y	N	Y	N	N
	Boston	US	MA	CFFC	0	10,099	13,494	13,494	Y	N	N	N	N	N	Y	N	N	N	Y
	China Lake	US	CA	NAVAIR	1,141,200	13,661	0	0	Y	Y	N	Y	N	Y	N	N	N	N	N
	El Centro	US	CA	CPF	43,948	256	0	0	Y	Y	Y	Y	N	N	N	N	N	N	Y
	Fallon	US	NV	CFFC	232,481	14,182	0	0	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
	Gulf of Mexico (GOMEX)	US	FL, MS, TX	CFFC	10,057	38,393	17,469	17,469	Y	Y	N	Y	Y	N	Y	N	N	Y	N
	Hawaii	US	HI	CPF	303	94,083	214,638	900	Y	Y	Y	Y	Y	N	Y	N	Y	Y	Y
	Jacksonville	US	FL, GA, SC	CFFC	17,728	61,265	50,098	50,098	Y	Y	N	Y	Y	N	Y	N	N	N	N
	Japan	OS	Japan	CPF	0	10,165	0	0	Y	N	N	N	N	N	N	N	N	N	N
	Key West	US	FL	CFFC	1	24,812	8,282	8,282	Y	N	N	N	N	N	Y	N	N	N	Y
	Mariana Islands	US	CNMI, Guam	CPF	24,894	8,726	8,698	8,698	Y	Y	Y	Y	Y	N	Y	Y	N	Y	Y
	Narragansett	US	RI	CFFC	0	13,005	27,208	27,208	Y	N	N	N	N	N	Y	N	N	N	N
	Navy Cherry Point	US	NC	CFFC	0	18,718	18,718	18,718	Y	N	N	N	N	Y	Y	N	N	N	Y
	Northern California (NOCAL)	US	CA	CPF	0	19,681	0	0	Y	N	N	N	N	N	N	N	N	N	N
	Northwest Training Range Complex	US	CA, OR, WA	CPF	49,674	42,714	128,103	128,103	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y
	Okinawa	OS	Japan	CPF	0	35,129	0	0	Y	Y	N	N	N	N	N	N	N	N	N
	Point Mugu Sea Range	US	CA	NAVAIR	15,000	27,712	27,278	0	Y	Y	N	N	N	Y	Y	N	N	N	N
	Southern California (SOCAL)	US	CA	CPF	43,437	113,231	120,000	7,699	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Virginia Capes (VACAPES)	US	NC, VA	CFFC	1,543	29,925	28,916	28,916	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N
Air Force	Adirondack	US	NY	ANG	75,000	200	0	0	N	Y	N	N	N	Y	N	N	N	N	N
	Airburst	US	CO	ANG	4,257	26	0	0	N	Y	N	N	N	Y	N	N	N	N	N
	Atterbury	US	IN	ANG	18,500	103	0	0	N	Y	N	N	N	Y	N	N	N	N	N
	Avon Park	US	FL	ACC	106,073	1,400	0	0	Y	Y	Y	N	N	N	N	Y	N	N	N
	Barry M. Goldwater Range (BMGR)	US	AZ	AETC	1,607,018	3,906	0	0	Y	Y	N	N	N	Y	N	N	N	N	N
	Belle Fourche ESS	US	WY	ACC	183	0	0	0	N	N	N	N	N	Y	N	N	N	N	N

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Air Force	Blair Lake	US	AK	PACAF	30,640	22,000	0	0	N	Y	N	N	N	N	N	N	N	N	N
	Bollen	US	PA	ANG	10,657	42	0	0	N	Y	N	N	N	Y	N	N	N	N	N
	Cannon	US	MO	ANG	4,600	339	0	0	N	Y	N	N	N	Y	N	N	N	N	N
	Claiborne	US	LA	AFRC	7,800	135	0	0	N	Y	N	N	N	Y	N	N	N	N	N
	Dare County	US	NC	ACC	46,621	1,184	0	0	Y	Y	N	N	N	Y	N	Y	N	N	N
	Draughon	OS	Japan	PACAF	0	0	0	0	N	Y	N	N	N	Y	N	N	N	N	N
	Edwards Flight Test Range	US	CA	AFMC	50,080	20,000	0	0	Y	Y	N	N	N	Y	N	N	N	N	N
	Eglin Test and Training Complex	US	FL	AFMC	463,360	133,979	0	0	Y	Y	N	N	N	Y	N	N	N	N	N
	Falcon	US	OK	AFRC	14,900	1,393	0	0	N	Y	Y	N	Y	Y	N	N	N	N	N
	Grand Bay	US	GA	ACC	6,000	17,290	0	0	N	Y	N	N	N	N	N	N	N	N	N
	Grayling	US	MI	ANG	145,025	63	0	0	Y	Y	N	N	N	Y	N	N	N	N	N
	Hardwood	US	WI	ANG	7,263	84	0	0	N	Y	N	N	N	Y	N	N	N	N	N
	Holloman	US	NM	ACC	207,800	2,256	0	0	Y	Y	N	N	N	N	N	Y	N	N	N
	Idesuna Jima	OS	Japan	PACAF	0	0	0	0	N	Y	N	N	N	N	N	N	N	N	N
	Jefferson	US	IN	ANG	50,000	160	0	0	Y	Y	N	N	N	Y	N	N	N	N	N
	McMullen	US	TX	ANG	2,800	63	0	0	N	Y	N	N	N	Y	N	N	N	N	N
	Melrose Air Force Range	US	NM	AFSOC	70,978	9,350	0	0	Y	Y	Y	Y	Y	Y	N	Y	N	N	N
	Mountain Home Ranges	US	ID	ACC	120,844	18,526	0	0	Y	Y	N	N	N	Y	N	Y	N	N	N
	Nevada Test and Training Range (NTTR)	US	NV	ACC	2,919,890	12,000	0	0	Y	Y	N	Y	Y	Y	N	Y	N	N	N
	Oklahoma	US	AK	PACAF	38,400	22,000	0	0	N	Y	N	N	N	Y	N	N	N	N	N
	Patrick	US	FL	AFSPC	14,591	25,239	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Pilsung	OS	Korea	PACAF	0	0	0	0	N	Y	N	N	N	Y	N	N	N	N	N
	Poinsett	US	SC	ACC	12,521	1,500	0	0	N	Y	N	N	N	Y	N	N	N	N	N
	Polygone	OS	France/ Germany	USAFE	0	0	0	0	N	Y	N	N	N	Y	N	N	N	N	N
	Razorback	US	AR	ANG	5,760	128	0	0	N	Y	N	N	N	Y	N	N	N	N	N
	Shelby	US	MS	ANG	26,676	0	0	0	N	Y	N	N	N	Y	N	N	N	N	N
	Siegenburg (Inactive)	OS	Germany	USAFE	0	0	0	0	N	Y	N	N	N	N	N	N	N	N	N
	Smoky Hill	US	KS	ANG	33,875	53	0	0	N	Y	N	N	N	Y	N	N	N	N	N

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Air Force	Snyder ESS	US	TX	ACC	90	0	0	0	N	N	N	N	N	Y	N	N	N	N	N
	Tori Shima	OS	Japan	PACAF	0	0	0	0	N	Y	N	N	N	N	N	N	N	N	N
	Townsend	US	GA	ANG	5,183	288	0	0	N	Y	N	N	N	Y	N	N	N	N	N
	Utah Test and Training Range (UTTR)	US	UT	ACC	1,712,000	12,574	0	0	Y	Y	N	N	N	Y	N	Y	N	N	N
	Vandenberg	US	CA	AFSPC	100,751	334	0	0	N	N	N	N	N	N	N	N	N	N	Y
	Warren Grove	US	NJ	ANG	9,416	30	0	0	N	Y	N	N	N	Y	N	N	N	N	N
	Yukon	US	AK	PACAF	25,240	22,000	0	0	N	Y	N	N	N	Y	N	N	N	N	N

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Table A-2 Special Use Airspace (SUA) Inventory

2015 SUA Name	Controlling Agency	Range Complex/ Installation Name	Upper Altitude	Lower Altitude	Military Service
(RJ)R104	USN, COMAFLOATRAGRUWESTPAC	Japan Range Complex	020000AMSL	SURFACE	USN
(RJ)R105	USN, COMAFLOATRAGRUWESTPAC	Japan Range Complex	UNLTD	SURFACE	USN
(RJ)R116A	USN, COMAFLOATRAGRUWESTPAC	Japan Range Complex	UNLTD	SURFACE	USN
(RJ)R116B	USN, COMAFLOATRAGRUWESTPAC	Japan Range Complex	012000AMSL	SURFACE	USN
(RJ)R116C	USN, COMAFLOATRAGRUWESTPAC	Japan Range Complex	009000AMSL	SURFACE	USN
(RJ)R121	USN, COMAFLOATRAGRUWESTPAC	Japan Range Complex	035000AMSL	SURFACE	USN
(RJR599)B (Octagon B)	COMNAVFORJAPAN	Japan Range Complex	UNLTD	SURFACE	USN
(RJR599)C (Octagon A)	COMNAVFORJAPAN	Japan Range Complex	UNLTD	SURFACE	USN
(RJR599)D (Octagon A)	COMNAVFORJAPAN	Japan Range Complex	UNLTD	SURFACE	USN
(RJR599)E (Octagon A)	COMNAVFORJAPAN	Japan Range Complex	UNLTD	SURFACE	USN
(RJR599)F (Octagon A)	COMNAVFORJAPAN	Japan Range Complex	UNLTD	SURFACE	USN
(RO)R177	USMC, CAMP SMEDLEY D. BUTLER	Okinawa Range Complex	003000AMSL	SURFACE	USMC
(RO)W173	USN, CFAO KADENA AB	Okinawa Range Complex	UNLTD	SURFACE	USN
(RO)W173D	USN, CFAO KADENA AB	Okinawa Range Complex	UNLTD	SURFACE	USN
(RO)W173E	USN, CFAO KADENA AB	Okinawa Range Complex	UNLTD	SURFACE	USN
(RO)W173F	USN, CFAO KADENA AB	Okinawa Range Complex	UNLTD	SURFACE	USN
(RO)W175	USN, CFAO KADENA AB	Okinawa Range Complex	004000AMSL	SURFACE	USN
(RO)W178A	USMC, CAMP SMEDLEY D. BUTLER	Okinawa Range Complex	013000AMSL	SURFACE	USMC
(RO)W181	USN, CFAO KADENA AB	Okinawa Range Complex	004000AMSL	SURFACE	USN
(RO)W182	USAF, CFAO KADENA AB	Okinawa Range Complex	004000AMSL	SURFACE	USAF
(RO)W183A	USN, CFAO KADENA AB	Okinawa Range Complex	UNLTD	SURFACE	USN
(RO)W184	USN, CFAO KADENA AB	Okinawa Range Complex	UNLTD	SURFACE	USN
(RO)W185	USN, CFAO KADENA AB	Okinawa Range Complex	UNLTD	SURFACE	USN
A211	USA, CAIRNES APP	Fort Rucker	005000AMSL	SURFACE	USA
A220	USAF, MCGUIRE AFB RAPCON	McGuire AFB	004500AMSL	SURFACE	USAF
A231	FAA, ALBUQUERQUE ARTCC	Luke AFB	006500AMSL	00500AGL	USAF
A260	USAF ACADEMY	USAF Academy	017500AMSL	SURFACE	USAF
A292	USN, COMTRAWING SIX	NAS Pensacola	003000AMSL	SURFACE	USN
A311	FAA, HONOLULU CERAP	Schofield, Kahuku, Kawailoa	000500AGL	SURFACE	USA
A371	USA, CAMPBELL AAF APP	Fort Campbell	002000AMSL	SURFACE	USA
A440	USAF, 14 FTW COLUMBUS AFB	Columbus AFB	006500AMSL	SURFACE	USAF
A481	USAF, NELLIS AFB	Nellis AFB	017000AMSL	07000AMSL	USAF
A530	USMC, CHERRY POINT APP	Cherry Point/Camp Lejeune Range Complex	017999MSL	SURFACE	USMC

2015 SUA Name	Controlling Agency	Range Complex/ Installation Name	Upper Altitude	Lower Altitude	Military Service
A531	USA, FORT BRAGG	Fort Bragg	001500AGL	00200AGL	USA
A561	USAF, SHEPPARD AFB	Sheppard AFB	004000AMSL	SURFACE	USAF
A562A	USAF, VANCE AFB	Vance AFB	010000AMSL	SURFACE	USAF
A562B	USAF, VANCE AFB	Vance AFB	010000AMSL	SURFACE	USAF
A632A	USN, CORPUS CHRISTI NAS	NAS Corpus Christi	018000AMSL	06000AMSL	USN
A632B	USN, CORPUS CHRISTI NAS	NAS Corpus Christi	018000AMSL	SURFACE	USN
A632C	USN, CORPUS CHRISTI NAS	NAS Corpus Christi	018000AMSL	SURFACE	USN
A632D	USN, CORPUS CHRISTI NAS	NAS Corpus Christi	010999AMSL	06000AMSL	USN
A632E	USN, CORPUS CHRISTI NAS	NAS Corpus Christi	008999AMSL	06000AMSL	USN
A632F	USN, CORPUS CHRISTI NAS	NAS Corpus Christi	018000AMSL	03000AGL	USN
A633A	USAF, LAUGHLIN AFB	Laughlin AFB	007000AMSL	SURFACE	USAF
A633B	USAF, LAUGHLIN AFB	Laughlin AFB	004000AMSL	SURFACE	USAF
A635	USAF, RANDOLPH AFB	Randolph AFB	004000AMSL	01500AMSL	USAF
A636	USAF, SHEPPARD AFB	Sheppard AFB	004000AMSL	SURFACE	USAF
A638	USAF, RANDOLPH AFB	Randolph AFB	003000AMSL	SURFACE	USAF
A639A	USAF, USAF ACADEMY	USAF Academy	012000AMSL	03000AGL	USAF
A639B	USAF, USAF ACADEMY	USAF Academy	012000AMSL	03000AGL	USAF
A640	USAF, RANDOLPH AFB	Randolph AFB	007500AMSL	00200AGL	USAF
A680	USN, WHIDBEY NAS APP	Whidbey Island Range Complex	003000AMSL	SURFACE	USN
A682(A)	USAF, TRAVIS AFB	Travis AFB	006000AMSL	SURFACE	USAF
A682(B)	USAF, TRAVIS AFB	Travis AFB	003000AMSL	SURFACE	USAF
A683	WICHITA TRACON	McConnell AFB (184 ARW, KS ANG)	004500AMSL	SURFACE	USAF(ANG)
A685	FAA, ATLANTA ARTCC	Camp Merrill	000700AGL	SURFACE	USA
ABEL BRAVO MOA, CA	FAA, LOS ANGELES ARTCC	Yuma Range Complex	017999MSL	07000AMSL	USMC
ABEL EAST MOA, CA	FAA, LOS ANGELES ARTCC	Yuma Range Complex	012999AMSL	05000AMSL	USMC
ABEL NORTH MOA, CA	FAA, LOS ANGELES ARTCC	Yuma Range Complex	017999MSL	07000AMSL	USMC
ABEL SOUTH MOA, CA	FAA, LOS ANGELES ARTCC	Yuma Range Complex	017999MSL	07000AMSL	USMC
ADA EAST MOA, KS	FAA, KANSAS CITY ARTCC	Vance AFB	018000AMSL	07000AMSL	USAF
ADA WEST MOA, KS	FAA, KANSAS CITY ARTCC	Vance AFB	018000AMSL	07000AMSL	USAF
AIRBURST A MOA, CO	FAA, DENVER ARTCC	Buckley ANGB	018000AMSL	01500AGL	USAF(ANG)
AIRBURST B MOA, CO	FAA, DENVER ARTCC	Buckley ANGB	018000AMSL	00500AGL	USAF(ANG)
AIRBURST C MOA, CO	FAA, DENVER ARTCC	Buckley ANGB	008499AMSL	00500AGL	USAF(ANG)
ANNE HIGH MOA, AR	FAA, FORT WORTH ARTCC	Barksdale AFB	018000AMSL	07000AMSL	USAF
ANNE LOW MOA, AR	FAA, FORT WORTH ARTCC	Barksdale AFB	006999AMSL	00100AGL	USAF

2015 SUA Name	Controlling Agency	Range Complex/ Installation Name	Upper Altitude	Lower Altitude	Military Service
AUSTIN 1 MOA, NV	FAA, SALT LAKE CITY ARTCC	Fallon Range Complex	FL350	00200AGL	USN
AUSTIN 2 MOA, NV	FAA, SALT LAKE CITY ARTCC	Fallon Range Complex	FL350	00200AGL	USN
AVON EAST HIGH MOA, FL	FAA, MIAMI ARTCC	MacDill AFB	013999AMSL	00500AGL	USAF
BAGDAD 1 MOA, AZ	FAA, ALBUQUERQUE ARTCC	Luke AFB	018000AMSL	07000AMSL	USAF
BAKERSFIELD MOA, CA	FAA, LOS ANGLES ARTCC	Edwards AFB	018000AMSL	02000AGL	USAF
BARSTOW MOA, CA	FAA, HI-DESERT TRACON, EDWARDS, CA	Edwards AFB	018000AMSL	00200AGL	USAF
BASINGER MOA, FL	FAA, MIAMI ARTCC	MacDill AFB	005000AMSL	00500AGL	USAF
BEAK A MOA, NM	FAA, ALBUQUERQUE ARTCC	Holloman AFB	018000AMSL	12500AMSL	USAF
BEAK B MOA, NM	FAA, ALBUQUERQUE ARTCC	Holloman AFB	018000AMSL	12500AMSL	USAF
BEAK C MOA, NM	FAA, ALBUQUERQUE ARTCC	Holloman AFB	018000AMSL	12500AMSL	USAF
BEAUFORT 1 MOA, SC	FAA, JACKSONVILLE ARTCC	MCAS Beaufort/Townsend Range Complex	010000AMSL	00100AGL	USMC
BEAUFORT 1 MOA, SC (XA)	FAA, JACKSONVILLE ARTCC	MCAS Beaufort/Townsend Range Complex	010000AMSL	03001AMSL	USMC
BEAUFORT 2 MOA, SC	FAA, JACKSONVILLE ARTCC	MCAS Beaufort/Townsend Range Complex	007000AMSL	00100AGL	USMC
BEAUFORT 2 MOA, SC (XA)	FAA, JACKSONVILLE ARTCC	MCAS Beaufort/Townsend Range Complex	007000AMSL	03001AMSL	USMC
BEAUFORT 3 MOA, SC	FAA, JACKSONVILLE ARTCC	MCAS Beaufort/Townsend Range Complex	002000AMSL	00100AGL	USMC
BEAVER MOA, MN	FAA, MINNEAPOLIS ARTCC	148 FIG, MN ANG	018000AMSL	00300AGL	USAF(ANG)
BEAVER MOA, MN (XA)	FAA, MINNEAPOLIS ARTCC	148 FIG, MN ANG	018000AMSL	01501AGL	USAF(ANG)
BEAVER MOA, MN (XB)	FAA, MINNEAPOLIS ARTCC	148 FIG, MN ANG	018000AMSL	01501AGL	USAF(ANG)
BEAVER MOA, MN (XC)	FAA, MINNEAPOLIS ARTCC	148 FIG, MN ANG	018000AMSL	01501AGL	USAF(ANG)
BEAVER MOA, MN (XD)	FAA, MINNEAPOLIS ARTCC	148 FIG, MN ANG	018000AMSL	01501AGL	USAF(ANG)
BEAVER MOA, MN (XE)	FAA, MINNEAPOLIS ARTCC	148 FIG, MN ANG	018000AMSL	01501AGL	USAF(ANG)
BENNING MOA, GA	FAA, COLUMBUS TWR	Fort Benning	008000AMSL	00500AGL	USA
BIG BEAR MOA, MI	FAA, MINNEAPOLIS ARTCC	148 FIG, MN ANG	018000AMSL	00500AMSL	USAF(ANG)
BIG BEAR MOA, MI (XA)	FAA, MINNEAPOLIS ARTCC	148 FIG, MN ANG	018000AMSL	00500AMSL	USAF(ANG)
BIRCH MOA, AK	FAA, ANCHORAGE ARTCC	Eielson AFB	005000AMSL	00500AGL	USAF
BIRCH MOA, AK (XA)	FAA, ANCHORAGE ARTCC	Eielson AFB	005000AMSL	00500AGL	USAF
BIRMINGHAM MOA, AL	FAA, ATLANTA ARTCC	187 FW, AL ANG	009999AMSL	00500AGL	USAF(ANG)
BIRMINGHAM 2 MOA, AL	FAA, ATLANTA ARTCC	187 FW, AL ANG	018000AMSL	10000AMSL	USAF(ANG)
BIRMINGHAM 2 MOA, AL (XA)	FAA, ATLANTA ARTCC	187 FW, AL ANG	009999AMSL	05001AMSL	USAF(ANG)
BIRMINGHAM 2 MOA, AL (XB)	FAA, ATLANTA ARTCC	187 FW, AL ANG	009999AMSL	04000AMSL	USAF(ANG)
BIRMINGHAM 2 MOA, AL(XC)	FAA, ATLANTA ARTCC	187 FW, AL ANG	009999AMSL	04000AMSL	USAF(ANG)
BISHOP MOA, CA	FAA, LOS ANGLES ARTCC	Edwards AFB	018000AMSL	00200AGL	USAF
BISON MOA, KS	FAA, LOS ANGLES ARTCC	Edwards AFB	018000AMSL	01000AGL	USAF
BISON MOA, KS (XA)	FAA, LOS ANGLES ARTCC	Edwards AFB	001500AGL	SURFACE	USAF

2015 SUA Name	Controlling Agency	Range Complex/ Installation Name	Upper Altitude	Lower Altitude	Military Service
BOARDMAN MOA, OR	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	018000AMSL	04000AMSL	USN
BRADY HIGH MOA, TX	FAA, HOUSTON ARTCC	Fort Worth NAS JRB	017999AMSL	06000AMSL	USN
BRADY LOW MOA, TX	FAA, HOUSTON ARTCC	Fort Worth NAS JRB	005999AMSL	00500AGL	USN
BRADY LOW MOA, TX (XA)	FAA, HOUSTON ARTCC	Fort Worth NAS JRB	005999AMSL	01501AGL	USN
BRADY LOW MOA, TX (XB)	FAA, HOUSTON ARTCC	Fort Worth NAS JRB	005999AMSL	01501AGL	USN
BRADY NORTH MOA, TX	FAA, FORT WORTH ARTCC	Fort Worth NAS JRB	017999AMSL	03600AMSL	USN
BRISTOL MOA, CA	FAA, LOS ANGELES ARTCC	Twentynine Palms Range Complex	017999MSL	05000AMSL	USMC
BRONCO 1 MOA, TX	FAA, FORT WORTH ARTCC	Cannon AFB	018000AMSL	08000AMSL	USAF
BRONCO 2 MOA, TX	FAA, FORT WORTH ARTCC	Cannon AFB	018000AMSL	10000AMSL	USAF
BRONCO 3 MOA, TX	FAA, FORT WORTH ARTCC	Cannon AFB	018000AMSL	10000AMSL	USAF
BRONCO 4 MOA, TX	FAA, FORT WORTH ARTCC	Cannon AFB	018000AMSL	10000AMSL	USAF
BROWNWOOD 1 EAST MOA, TX	FAA, FORT WORTH ARTCC	Fort Worth NAS JRB	017999AMSL	07000AMSL	USN
BROWNWOOD 1 WEST MOA, TX	FAA, FORT WORTH ARTCC	Fort Worth NAS JRB	017999AMSL	07000AMSL	USN
BROWNWOOD 2 EAST MOA, TX	FAA, FORT WORTH ARTCC	Fort Worth NAS JRB	017999AMSL	07000AMSL	USN
BROWNWOOD 2 WEST MOA, TX	FAA, FORT WORTH ARTCC	Fort Worth NAS JRB	017999AMSL	07000AMSL	USN
BROWNWOOD 3 MOA, TX	FAA, FORT WORTH ARTCC	Fort Worth NAS JRB	017999AMSL	13000AMSL	USN
BROWNWOOD 4 MOA, TX	FAA, FORT WORTH ARTCC	Fort Worth NAS JRB	017999AMSL	13000AMSL	USN
BRUSH CREEK MOA, OH	FAA, INDIANAPOLIS ARTCC	123 ACS, OH ANG	004999AMSL	00100AGL	USAF(ANG)
BUCKEYE MOA, OH	FAA, INDIANAPOLIS ARTCC	123 ACS, OH ANG	018000AMSL	05000AMSL	USAF(ANG)
BUCKHORN MOA, CA	FAA, LOS ANGELES ARTCC	Edwards AFB	018000AMSL	00200AGL	USAF
BUFFALO MOA, AK	FAA, ANCHORAGE ARTCC	Eielson AFB	006999AMSL	00300AGL	USAF
BUFFALO MOA, AK (XA)	FAA, ANCHORAGE ARTCC	Eielson AFB	006999AMSL	03000AMSL	USAF
BUFFALO MOA, AK (XB)	FAA, ANCHORAGE ARTCC	Eielson AFB	006999AMSL	03500AMSL	USAF
BUFFALO MOA, AK (XC)	FAA, ANCHORAGE ARTCC	Eielson AFB	006999AMSL	01500AGL	USAF
BUFFALO MOA, AK (XD)	FAA, ANCHORAGE ARTCC	Eielson AFB	006999AMSL	01500AGL	USAF
BULLDOG A MOA, GA	FAA, ATLANTA ARTCC	Shaw AFB	009999AMSL	00500AGL	USAF
BULLDOG A MOA, GA (XA)	FAA, ATLANTA ARTCC	Shaw AFB	009999AMSL	01501AGL	USAF
BULLDOG A MOA, GA (XB)	FAA, ATLANTA ARTCC	Shaw AFB	009999AMSL	01501AGL	USAF
BULLDOG A MOA, GA (XC)	FAA, ATLANTA ARTCC	Shaw AFB	009999AMSL	01501AGL	USAF
BULLDOG B MOA, GA	FAA, ATLANTA ARTCC	Shaw AFB	018000AMSL	10000AMSL	USAF
BULLDOG C MOA, GA	FAA, ATLANTA ARTCC	Shaw AFB	009999AMSL	00500AGL	USAF
BULLDOG C MOA, GA (XA)	FAA, ATLANTA ARTCC	Shaw AFB	009999AMSL	01501AGL	USAF
BULLDOG D MOA, GA	FAA, ATLANTA ARTCC	Shaw AFB	017000AMSL	00500AGL	USAF
BULLDOG D MOA, GA (XA)	FAA, ATLANTA ARTCC	Shaw AFB	017000AMSL	01501AGL	USAF

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BULLDOG E MOA, GA	FAA, ATLANTA ARTCC	Shaw AFB	009999AMSL	05000AMSL	USAF
CAMDEN RIDGE MOA, AL	FAA, ATLANTA ARTCC	187 FW, AL ANG	009999AMSL	00500AGL	USAF(ANG)
CAMDEN RIDGE MOA, AL (XA)	FAA, ATLANTA ARTCC	187 FW, AL ANG	009999AMSL	04000AMSL	USAF(ANG)
CAMPBELL 1 MOA, KY	FAA, MEMPHIS ARTCC	Fort Campbell	010000AMSL	00500AGL	USA
CAMPBELL 2 MOA, KY	FAA, MEMPHIS ARTCC	Fort Campbell	010000AMSL	01500AGL	USA
CAMPBELL 2 MOA, KY (XA)	FAA, MEMPHIS ARTCC	Fort Campbell	010000AMSL	02501AGL	USA
CANNON A MOA, MO	FAA, KANSAS CITY ARTCC	131 TFW, Det 1, MO ANG	018000AMSL	00300AGL	USAF(ANG)
CANNON B MOA, MO	FAA, KANSAS CITY ARTCC	131 TFW, Det 1, MO ANG	018000AMSL	00100AGL	USAF(ANG)
CARSON MOA, NV	FAA, OAKLAND ARTCC	Fallon Range Complex	018000AMSL	00500AGL	USN
CATO MOA, NM	FAA, ALBUQUERQUE ARTCC	Kirtland AFB	018000AMSL	13500AMSL	USAF
CHEYENNE HIGH MOA, CO	FAA, DENVER ARTCC	Buckley ANGB	018000AMSL	09000AMSL	USAF(ANG)
CHEYENNE LOW MOA, CO	FAA, DENVER ARTCC	Buckley ANGB	008999AMSL	00300AGL	USAF(ANG)
CHEYENNE LOW MOA (XA), CO	FAA, DENVER ARTCC	Buckley ANGB	008999AMSL	01501AMSL	USAF(ANG)
CHINA MOA, CA	FAA, OAKLAND ARTCC	Beale AFB	018000AMSL	03000AGL	USAF
CHINOOK A MOA, WA	USN, WHIDBEY IS NAS APP	Whidbey Island Range Complex	005000AMSL	00300AMSL	USN
CHINOOK B MOA, WA	USN, WHIDBEY IS NAS APP	Whidbey Island Range Complex	005000AMSL	00300AMSL	USN
CHURCHILL HIGH MOA, NV	FAA, OAKLAND ARTCC	Fallon Range Complex	018000AMSL	09000AMSL	USN
CHURCHILL LOW MOA, NV	FAA, OAKLAND ARTCC	Fallon Range Complex	009000AMSL	00500AGL	USN
CLAIBORNE A MOA, LA	USA, POLK APP CON	Claiborne	009999AMSL	00100AGL	USAF
CLAIBORNE B MOA, LA	USA, POLK APP CON	Claiborne	018000AMSL	10000AMSL	USAF
COLUMBUS 1 MOA, MS	FAA, MEMPHIS ARTCC	Columbus AFB	018000AMSL	08000AMSL	USAF
COLUMBUS 2 MOA, MS	FAA, MEMPHIS ARTCC	Columbus AFB	018000AMSL	08000AMSL	USAF
COLUMBUS 3 MOA, MS	FAA, MEMPHIS ARTCC	Columbus AFB	018000AMSL	08000AMSL	USAF
COLUMBUS 4 MOA, MS	FAA, MEMPHIS ARTCC	Columbus AFB	018000AMSL	10000AMSL	USAF
CONDOR 1 MOA, ME	FAA, BOSTON ARTCC	NE ADS/DOOS, NY ANG	018000AMSL	07000AMSL	USAF(ANG)
CONDOR 2 MOA, ME	FAA, BOSTON ARTCC	NE ADS/DOOS, NY ANG	018000AMSL	07000AMSL	USAF(ANG)
CRYPT CENTRAL MOA, IA	FAA, MINNEAPOLIS ARTCC	132 FW, IA ANG	018000AMSL	08000AMSL	USAF(ANG)
CRYPT NORTH MOA, IA	FAA, MINNEAPOLIS ARTCC	132 FW, IA ANG	018000AMSL	08000AMSL	USAF(ANG)
CRYPT SOUTH MOA, IA	FAA, MINNEAPOLIS ARTCC	132 FW, IA ANG	018000AMSL	08000AMSL	USAF(ANG)
CRYSTAL MOA, TX	FAA, HOUSTON ARTCC	Laughlin AFB	018000AMSL	06000AMSL	USAF
CRYSTAL NORTH MOA, TX	FAA, HOUSTON ARTCC	Laughlin AFB	018000AMSL	06000AMSL	USAF
D3002	NASSAU, ACC	AUTEC	00500AMSL	SURFACE	USN
D3003A	NASSAU, ACC	AUTEC	UNLTD	SURFACE	USN
D3003B	NASSAU, ACC	AUTEC	UNLTD	SURFACE	USN

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D3003C	NASSAU, ACC	AUTEC	UNLTD	SURFACE	USN
DEEPWOODS MOA, ME	FAA, BANGOR APP CON	CO, Army Avn Support Fac/ME ANG	003000AMSL	SURFACE	USAF(ANG)
DEMO 1 MOA, VA	FAA, POTOMAC TRACON	Quantico Range Complex	005000AMSL	00500AMSL	USMC
DEMO 2 MOA, VA	FAA, POTOMAC TRACON	Quantico Range Complex	015000AMSL	10000AMSL	USMC
DEMO 3 MOA, VA	FAA, POTOMAC TRACON	Quantico Range Complex	015000AMSL	05000AMSL	USMC
DESERT MOA, NV	FAA, LOS ANGELES ARTCC	Nellis AFB	018000AMSL	00100AGL	USAF
DESERT MOA, NV (XA)	FAA, LOS ANGELES ARTCC	Nellis AFB	018000AMSL	01501AGL	USAF
DESERT MOA, NV (XB)	FAA, LOS ANGELES ARTCC	Nellis AFB	018000AMSL	01501AGL	USAF
DEVILS LAKE EAST MOA, ND	FAA, MINNEAPOLIS ARTCC	McChord AFB	018000AMSL	03500AMSL	USAF
DEVILS LAKE WEST MOA, ND	FAA, MINNEAPOLIS ARTCC	McChord AFB	018000AMSL	04000AMSL	USAF
DOLPHIN NORTH MOA, OR	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	018000AMSL	11000AMSL	USN
DOLPHIN SOUTH MOA, OR	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	018000AMSL	11000AMSL	USN
DOME MOA, AZ	FAA, LOS ANGELES ARTCC	Yuma Range Complex	018000AMSL	06000AMSL	USMC
DUKE MOA, PA	FAA, CLEVELAND ARTCC	112 ACS/DOT, PA ANG	018000AMSL	08000AMSL	USAF(ANG)
EGLIN A EAST MOA, FL	FAA, JACKSONVILLE ARTCC	Eglin AFB	018000AMSL	01000AGL	USAF
EGLIN A WEST MOA, FL	FAA, JACKSONVILLE ARTCC	Eglin AFB	018000AMSL	01000AGL	USAF
EGLIN B MOA, FL	FAA, JACKSONVILLE ARTCC	Eglin AFB	018000AMSL	01000AGL	USAF
EGLIN C MOA, FL	FAA, JACKSONVILLE ARTCC	Eglin AFB	018000AMSL	01000AGL	USAF
EGLIN D MOA, FL	FAA, JACKSONVILLE ARTCC	Eglin AFB	003000AMSL	01000AGL	USAF
EGLIN E MOA, FL	FAA, JACKSONVILLE ARTCC	Eglin AFB	018000AMSL	SURFACE	USAF
EGLIN F MOA, FL	FAA, JACKSONVILLE ARTCC	Eglin AFB	018000AMSL	SURFACE	USAF
EIELSON MOA, AK	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMSL	00100AGL	USAF
EIELSON MOA, AK (XA)	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMSL	01501AGL	USAF
EUREKA HIGH MOA, KS	FAA, KANSAS CITY ARTCC	McConnell AFB (184 ARW, KS ANG)	018000AMSL	06000AMSL	USAF(ANG)
EUREKA LOW MOA, KS	FAA, KANSAS CITY ARTCC	McConnell AFB (184 ARW, KS ANG)	005999AMSL	02500AMSL	USAF(ANG)
EVERS MOA, WV	FAA, WASHINGTON, DC ARTCC	Langley AFB	018000AMSL	01000AGL	USAF
FALLS 1 MOA, WI	FAA, MINNEAPOLIS ARTCC	Volk Field ANGB	018000AMSL	00500AGL	USAF(ANG)
FALLS 1 MOA, WI (XA)	FAA, MINNEAPOLIS ARTCC	Volk Field ANGB	018000AMSL	01501AGL	USAF(ANG)
FALLS 2 MOA, WI	FAA, MINNEAPOLIS ARTCC	Volk Field ANGB	018000AMSL	00500AGL	USAF(ANG)
FALLS 2 MOA, WI (XA)	FAA, MINNEAPOLIS ARTCC	Volk Field ANGB	018000AMSL	01501AGL	USAF(ANG)
FARMVILLE MOA, VA	FAA, WASHINGTON, DC ARTCC	Langley AFB	005000AMSL	00300AGL	USAF
FARMVILLE MOA, VA (XA)	FAA, WASHINGTON, DC ARTCC	Langley AFB	005000AMSL	01501AGL	USAF
FARMVILLE MOA, VA (XB)	FAA, WASHINGTON, DC ARTCC	Langley AFB	005000AMSL	01501AGL	USAF
FOOTHILL 1 MOA, CA	FAA, OAKLAND ARTCC	NAS Lemoore	018000AMSL	02000AGL	USN

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FOOTHILL 2 MOA, CA	FAA, OAKLAND ARTCC	NAS Lemoore	018000AMSL	02000AGL	USN
FORT BRAGG NORTH AREA A MOA, NC	FAA, FAYETTEVILLE TWR	Fort Bragg	006000AMSL	00500AGL	USA
FORT BRAGG NORTH AREA B MOA, NC	FAA, FAYETTEVILLE TWR	Fort Bragg	006000AMSL	04000AMSL	USA
FORT BRAGG SOUTH AREA A MOA, NC	FAA, FAYETTEVILLE TWR	Fort Bragg	006000AMSL	00500AGL	USA
FORT BRAGG SOUTH AREA A MOA, NC (XA)	FAA, FAYETTEVILLE TWR	Fort Bragg	006000AMSL	03001AMSL	USA
FORT BRAGG SOUTH AREA B MOA, NC	FAA, FAYETTEVILLE TWR	Fort Bragg	006000AMSL	01500AGL	USA
FORT STEWART B1 MOA, GA	FAA, JACKSONVILLE ARTCC	Fort Stewart	004999AMSL	00500AGL	USA
FORT STEWART B2 MOA, GA	FAA, JACKSONVILLE ARTCC	Fort Stewart	010000AMSL	05000AMSL	USA
FORT STEWART C1 MOA, GA	FAA, JACKSONVILLE ARTCC	Fort Stewart	002999AMSL	00500AGL	USA
FORT STEWART C2 MOA, GA	FAA, JACKSONVILLE ARTCC	Fort Stewart	010000AMSL	03000AMSL	USA
FOX 1 MOA, AK	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMSL	05000AGL	USAF
FOX 2 MOA, AK	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMSL	07000AMSL	USAF
FOX 3 MOA, AK	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMSL	05000AMSL	USAF
FUZZY MOA, AZ	FAA, ALBUQUERQUE ARTCC	Barry M. Goldwater Range	009999AMSL	00100AGL	USAF
GABBS CENTRAL MOA, NV	FAA, OAKLAND ARTCC	Fallon Range Complex	018000AMSL	00100AGL	USN
GABBS NORTH MOA, NV	FAA, OAKLAND ARTCC	Fallon Range Complex	018000AMSL	00100AGL	USN
GABBS SOUTH MOA, NV	FAA, OAKLAND ARTCC	Fallon Range Complex	018000AMSL	00100AGL	USN
FALLON NORTH 1 MOA, NV	FAA, OAKLAND ARTCC		017999AMSL	00100AGL	USN
GALENA MOA, AK	FAA, ANCHORAGE ARTCC	Elmendorf AFB	018000AMSL	01000AMSL	USAF
GAMECOCK A MOA, NC	FAA, WASHINGTON, DC ARTCC	Shaw AFB (20 OSS/OSOS)	018000AMSL	07000AMSL	USAF
GAMECOCK B MOA, SC	FAA, JACKSONVILLE ARTCC	Shaw AFB	018000AMSL	10000AMSL	USAF
GAMECOCK C MOA, SC	FAA, JACKSONVILLE ARTCC	Shaw AFB	010000AMSL	00100AGL	USAF
GAMECOCK C MOA, SC (XA)	FAA, JACKSONVILLE ARTCC	Shaw AFB	010000AMSL	01501AGL	USAF
GAMECOCK C MOA, SC (XB)	FAA, JACKSONVILLE ARTCC	Shaw AFB	010000AMSL	01501AGL	USAF
GAMECOCK D MOA, SC	FAA, JACKSONVILLE ARTCC	Shaw AFB	018000AMSL	10000AMSL	USAF
GAMECOCK I MOA, SC	FAA, JACKSONVILLE ARTCC	Shaw AFB	006000AMSL	00100AGL	USAF
GANDY MOA, UT	FAA, SALT LAKE CITY ARTCC	Hill AFB	018000AMSL	00100AGL	USAF
GLADDEN 1 MOA, AZ	FAA, ALBUQUERQUE ARTCC	Luke AFB	018000AMSL	05000AGL	USAF
GOOSE NORTH MOA, OR	FAA, SEATTLE ARTCC	Kingsley Fld	018000AMSL	03000AGL	USAF(ANG)
GOOSE SOUTH MOA, OR	FAA, SEATTLE ARTCC	Kingsley Fld	018000AMSL	10000AMSL	USAF(ANG)
GRAY MOA, TX	FAA, HOUSTON ARTCC	Fort Hood	010000AMSL	02000AMSL	USA
HACKETT MOA, LA	FAA, FORT WORTH ARTCC	Barksdale AFB	018000AMSL	07000AMSL	USAF
HACKETT MOA, LA (XA)	FAA, FORT WORTH ARTCC	Barksdale AFB	018000AMSL	10000AMSL	USAF
HART NORTH MOA, OR	FAA, SEATTLE ARTCC	173 FW, OR ANG	018000AMSL	11000AMSL	USAF(ANG)

2015 SUA Name	Controlling Agency	Range Complex/ Installation Name	Upper Altitude	Lower Altitude	Military Service
HART SOUTH MOA, OR	FAA, SEATTLE ARTCC	173 FW, OR ANG	018000AMSL	11000AMSL	USAF(ANG)
HATTERAS F MOA, NC	FAA, WASHINGTON, DC ARTCC	Cherry Point/Camp Lejeune Range Complex	013000AMSL	03000AMSL	USMC
HAYS MOA, MT	FAA, SALT LAKE CITY ARTCC	120 FW, MT ANG	018000AMSL	00300AGL	USAF(ANG)
HERSEY MOA, MI	FAA, MINNEAPOLIS ARTCC	110 TASG, MI ANG	018000AMSL	05000AMSL	USAF(ANG)
HILL MOA, VA	FAA, POTOMAC APP	Fort A.P. Hill	003000AMSL	SURFACE	USA
HILL TOP MOA, IN	FAA, CHICAGO ARTCC		018000AMSL	10000AMSL	USAF(ANG)
HOG HIGH NORTH MOA, AR	FAA, MEMPHIS ARTCC	Fort Smith	018000AMSL	06000AMSL	USAF
HOG HIGH SOUTH MOA, AR	FAA, MEMPHIS ARTCC	Fort Smith	018000AMSL	06000AMSL	USAF
HOG LOW NORTH MOA, AR	FAA, MEMPHIS ARTCC	Fort Smith	005999AMSL	00100AGL	USAF
HOG LOW NORTH MOA, AR (XA)	FAA, MEMPHIS ARTCC	Fort Smith	001500AGL	SURFACE	USAF
HOG LOW NORTH MOA, AR (XB)	FAA, MEMPHIS ARTCC	Fort Smith	001500AGL	SURFACE	USAF
HOG LOW SOUTH MOA, AR	FAA, MEMPHIS ARTCC	Fort Smith	005999AMSL	00100AGL	USAF
HOG LOW SOUTH MOA, AR (XA)	FAA, MEMPHIS ARTCC		005999AMSL	01501AGL	USA
HOLLIS MOA, OK	FAA, FORT WORTH ARTCC	Sheppard AFB	018000AMSL	11000AMSL	USAF
HOOD MOA, TX	FAA, HOUSTON ARTCC	Fort Hood	010000AMSL	02000AMSL	USA
HOOD MOA, TX	FAA, HOUSTON ARTCC	Fort Hood	FL180	10000AMSL	USA
HOWARD EAST MOA, IL	FAA, KANSAS CITY ARTCC	Springfield	018000AMSL	09000AMSL	USA
HOWARD WEST MOA, IL	FAA, KANSAS CITY ARTCC	Springfield	018000AMSL	10000AMSL	USA
HUNTER HIGH MOA, CA	FAA, OAKLAND ARTCC	NAS Lemoore	018000AMSL	11000AMSL	USN
HUNTER LOW A MOA, CA	FAA, OAKLAND ARTCC	NAS Lemoore	010999AMSL	00200AGL	USN
HUNTER LOW B MOA, CA	FAA, OAKLAND ARTCC	NAS Lemoore	010999AMSL	02000AGL	USN
HUNTER LOW C MOA, CA	FAA, OAKLAND ARTCC	NAS Lemoore	010999AMSL	03000AGL	USN
HUNTER LOW D MOA, CA	FAA, OAKLAND ARTCC	NAS Lemoore	006000AMSL	01500AGL	USN
HUNTER LOW E MOA, CA	FAA, OAKLAND ARTCC	NAS Lemoore	003000AMSL	01500AGL	USN
ISABELLA MOA, CA	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	018000AMSL	00200AGL	USAF
ISABELLA MOA, CA (XA)	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	018000AMSL	01501AGL	USAF
ISABELLA MOA, CA (XB)	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	018000AMSL	01501AGL	USAF
ISABELLA MOA, CA (XC)	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	018000AMSL	01501AGL	USAF
ISABELLA MOA, CA (XD)	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	018000AMSL	01501AGL	USAF
ISABELLA MOA, CA (XE)	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	018000AMSL	01501AGL	USAF
ISABELLA MOA, CA (XF)	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	018000AMSL	01501AGL	USAF
ISABELLA MOA, CA (XG)	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	018000AMSL	01501AGL	USAF
ISABELLA MOA, CA (XH)	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	018000AMSL	01501AGL	USAF
ISABELLA MOA, CA (XI)	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	004800AMSL	SURFACE	USAF

2015 SUA Name	Controlling Agency	Range Complex/ Installation Name	Upper Altitude	Lower Altitude	Military Service
ISABELLA MOA, CA (XJ)	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	018000AMSL	00200AGL	USAF
JACKAL LOW MOA, AZ	FAA, ALBUQUERQUE ARTCC	162 FW, AZ ANG	010999AMSL	00100AGL	USAF(ANG)
JACKAL MOA, AZ	FAA, ALBUQUERQUE ARTCC	162 FW, AZ ANG	018000AMSL	11000AMSL	USAF(ANG)
JACKAL LOW MOA, AZ (XA)	FAA, ALBUQUERQUE ARTCC	162 FW, AZ ANG	010999AMSL	01501AGL	USAF(ANG)
JARBIDGE NORTH MOA, ID	FAA, SALT LAKE CITY ARTCC	Mt. Home AFB	017999AMSL	00100AGL	USAF
JARBIDGE MOA, ID (XA)	FAA, SALT LAKE CITY ARTCC	Mt. Home AFB	017999AMSL	01501AGL	USAF
JARBIDGE MOA, ID (XB)	FAA, SALT LAKE CITY ARTCC	Mt. Home AFB	017999AMSL	02001AGL	USAF
JARBIDGE MOA, ID (XC)	FAA, SALT LAKE CITY ARTCC	Mt. Home AFB	017999AMSL	00501AGL	USAF
JENA 1 MOA, LA	FAA, HOUSTON ARTCC	Barksdale AFB	005000AMSL	00100AGL	USAF
JENA 1 MOA, LA (XA)	FAA, HOUSTON ARTCC	Barksdale AFB	005000AMSL	01501AGL	USAF
JENA 1 MOA, LA (XB)	FAA, HOUSTON ARTCC	Barksdale AFB	005000AMSL	01501AGL	USAF
JENA 1 MOA, LA (XC)	FAA, HOUSTON ARTCC	Barksdale AFB	005000AMSL	01501AGL	USAF
JENA 1 MOA, LA (XD)	FAA, HOUSTON ARTCC	Barksdale AFB	005000AMSL	01501AGL	USAF
KANE EAST MOA, CA	FAA, LOS ANGELES ARTCC	Yuma Range Complex	017999MSL	10000AMSL	USMC
KANE SOUTH MOA, CA	FAA, LOS ANGLES ARTCC	Yuma Range Complex	017999MSL	10000AMSL	USMC
KANE WEST MOA, CA	FAA, LOS ANGELES ARTCC	Yuma Range Complex	017999MSL	10000AMSL	USMC
KINGSVILLE 1 MOA, TX	FAA, HOUSTON ARTCC	GOMEX Range Complex	017999AMSL	08000AMSL	USN
KINGSVILLE 2 MOA, TX	FAA, HOUSTON ARTCC	GOMEX Range Complex	017999AMSL	13000AMSL	USN
KINGSVILLE 3 MOA, TX	FAA, HOUSTON ARTCC	GOMEX Range Complex	017999AMSL	08000AMSL	USN
KINGSVILLE 4 MOA, TX	FAA, HOUSTON ARTCC	GOMEX Range Complex	017999AMSL	09000AMSL	USN
KINGSVILLE 5 MOA, TX	FAA, HOUSTON ARTCC	GOMEX Range Complex	018000AMSL	09000AMSL	USN
LA VETA HIGH MOA, CO	FAA, DENVER ARTCC	Buckley ANGB	018000AMSL	13000AMSL	USAF(ANG)
LA VETA LOW MOA, CO	FAA, DENVER ARTCC	Buckley ANGB	013000AMSL	01500AGL	USAF(ANG)
LAKE ANDES MOA, SD	FAA, MINNEAPOLIS ARTCC	Sioux Falls	018000AMSL	06000AMSL	USA
LAKE PLACID MOA EAST, FL	FAA, MIAMI ARTCC	MacDill AFB	FL180	07000AMSL	USAF
LAKE PLACID MOA NORTH, FL	FAA, MIAMI ARTCC	MacDill AFB	FL180	07000AMSL	USAF
LAKE PLACID MOA WEST, FL	FAA, MIAMI ARTCC	MacDill AFB	FL180	07000AMSL	USAF
LANCER MOA, TX	FAA, FORT WORTH ARTCC	Dyess AFB	018000AMSL	06200AMSL	USAF
LAUGHLIN 1 MOA, TX	FAA, HOUSTON ARTCC	Laughlin AFB	018000AMSL	09000AMSL	USAF
LAUGHLIN 2 MOA, TX	FAA, HOUSTON ARTCC	Laughlin AFB	018000AMSL	07000AMSL	USAF
LAUGHLIN 3 HIGH MOA, TX	FAA, HOUSTON ARTCC	Laughlin AFB	FL180	15000AMSL	USAF
LAUGHLIN 3 LOW MOA, TX	FAA, HOUSTON ARTCC	Laughlin AFB	014999AMSL	07000AMSL	USAF
Lemoore MOA A	FAA,OAKLAND ARTCC	NOCAL Range Complex	FL180	05000AMSL	USN
Lemoore MOA B	FAA,OAKLAND ARTCC	NOCAL Range Complex	FL180	13000AMSL	USN

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Lemoore MOA C	FAA,OAKLAND ARTCC	NOCAL Range Complex	FL180	16000AMSL	USN
Lemoore MOA D	FAA,OAKLAND ARTCC	NOCAL Range Complex	FL180	05000AMSL	USN
Lemoore MOA E	FAA,OAKLAND ARTCC	NOCAL Range Complex	FL180	05000AMSL	USN
LINCOLN MOA, NE	FAA, MINNEAPOLIS ARTCC	155 TRG, NE ANG	018000AMSL	08000AMSL	USAF(ANG)
LINDBERGH A MOA, MO	FAA, KANSAS CITY ARTCC	131 FW, MO ANG	018000AMSL	07000AMSL	USAF(ANG)
LINDBERGH B MOA, MO	FAA, KANSAS CITY ARTCC	131 FW, MO ANG	018000AMSL	08000AMSL	USAF(ANG)
LINDBERGH C MOA, MO	FAA, KANSAS CITY ARTCC	131 FW, MO ANG	018000AMSL	08000AMSL	USAF(ANG)
LIVE OAK MOA, FL	FAA, JACKSONVILLE ARTCC	Moody AFB	018000AMSL	08000AMSL	USAF
LUCIN A MOA, UT	FAA, SALT LAKE CITY ARTCC	Hill AFB	009000AMSL	00100AGL	USAF
LUCIN B MOA, UT	FAA, SALT LAKE CITY ARTCC	Hill AFB	007500AMSL	00100AGL	USAF
LUCIN C MOA, UT	FAA, SALT LAKE CITY ARTCC	Hill AFB	006500AMSL	00100AGL	USAF
MARIAN MOA, FL	FAA, MIAMI ARTCC	MacDill AFB	005000AMSL	00500AGL	USAF
MAXWELL 1 MOA, CA	FAA, OAKLAND ARTCC	Beale AFB	018000AMSL	11000AMSL	USAF
MAXWELL 2 MOA, CA	FAA, OAKLAND ARTCC	Beale AFB	018000AMSL	11000AMSL	USAF
MAXWELL 3 MOA, CA	FAA, OAKLAND ARTCC	Beale AFB	018000AMSL	11000AMSL	USAF
MAYPORT HIGH MOA, FL	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	017999AMSL	03000AMSL	USN
MAYPORT LOW MOA, FL	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	002999AMSL	00500AMSL	USN
MERIDIAN 1 EAST MOA, MS	FAA, MEMPHIS ARTCC	Meridian Complex	018000AMSL	08000AMSL	USN
MERIDIAN 2 EAST MOA, MS	FAA, MEMPHIS ARTCC	Meridian Complex	018000AMSL	08000AMSL	USN
MERIDIAN 1 WEST MOA, MS	FAA, MEMPHIS ARTCC	Meridian Complex	018000AMSL	08000AMSL	USN
MERIDIAN 2 WEST MOA, MS	FAA, MEMPHIS ARTCC	Meridian Complex	018000AMSL	08000AMSL	USN
MINNOW MOA, WI	FAA, CHICAGO ARTCC	Volk Field ANGB	018000AMSL	10000AMSL	USAF(ANG)
MISTY 1 MOA, NY	FAA, CLEVELAND ARTCC	174 FW, NY ANG	018000AMSL	04000AMSL	USAF(ANG)
MISTY 2 MOA, NY	FAA, CLEVELAND ARTCC	174 FW, NY ANG	018000AMSL	00300AGL	USAF(ANG)
MISTY 3 MOA, NY	FAA, CLEVELAND ARTCC	174 FW, NY ANG	018000AMSL	11000AMSL	USAF(ANG)
MOODY 1 MOA, GA	FAA, JACKSONVILLE ARTCC	Moody AFB	018000AMSL	08000AMSL	USAF
MOODY 2 NORTH MOA, GA	FAA, JACKSONVILLE ARTCC	Moody AFB	007999AMSL	00500AGL	USAF
MOODY 2 SOUTH MOA, GA	FAA, JACKSONVILLE ARTCC	Moody AFB	007999AMSL	00100AGL	USAF
MOODY 3 MOA, GA	FAA, JACKSONVILLE ARTCC	Moody AFB	018000AMSL	08000AMSL	USAF
MORENCI MOA, AZ	FAA, ALBUQUERQUE ARTCC	162 FW, AZ ANG	018000AMSL	01500AGL	USAF(ANG)
MORENCI MOA, AZ (XA)	FAA, ALBUQUERQUE ARTCC	162 FW, AZ ANG	018000AMSL	05001AMSL	USAF(ANG)
MT DORA EAST HIGH MOA, NM	FAA, ALBUQUERQUE ARTCC	Cannon AFB	018000AMSL	11000AMSL	USAF
MT DORA EAST LOW MOA, NM	FAA, ALBUQUERQUE ARTCC	Cannon AFB	010999AMSL	01500AGL	USAF
MT DORA NORTH HIGH MOA, NM	FAA, ALBUQUERQUE ARTCC	Cannon AFB	018000AMSL	11000AMSL	USAF

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MT DORA NORTH LOW MOA, NM	FAA, ALBUQUERQUE ARTCC	Cannon AFB	010999AMSL	01500AGL	USAF
MT DORA WEST HIGH MOA, NM	FAA, ALBUQUERQUE ARTCC	Cannon AFB	018000AMSL	11000AMSL	USAF
MT DORA WEST LOW MOA, NM	FAA, ALBUQUERQUE ARTCC	Cannon AFB	010999AMSL	01500AGL	USAF
NAKNEK 1 MOA, AK	FAA, ANCHORAGE ARTCC	Elmendorf AFB	018000AMSL	03000AGL	USAF
NAKNEK 2 MOA, AK	FAA, ANCHORAGE ARTCC	Elmendorf AFB	018000AMSL	03000AGL	USAF
OLIKTOK POINT HIGH	FAA, ANCHORAGE ARTCC	Elmendorf AFB	007000AMSL	01500AMSL	USAF
OLIKTOK POINT LOW	FAA, ANCHORAGE ARTCC	Elmendorf AFB	001500AMSL	SURFACE	USAF
O NEILL MOA, SD	FAA, MINNEAPOLIS ARTCC	185 FW, IA ANG	018000AMSL	00500AGL	USAF(ANG)
OKANOGAN A MOA, WA	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	018000AMSL	09000AMSL	USN
OKANOGAN B MOA, WA	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	008999AMSL	00300AGL	USN
OKANOGAN B MOA, WA (XA)	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	008999AMSL	01501AGL	USN
OKANOGAN C MOA, WA	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	008999AMSL	00300AGL	USN
OKANOGAN C MOA, WA (XA)	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	008999AMSL	01501AGL	USN
OLYMPIC A MOA, WA	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	018000AMSL	06000AMSL	USN
OLYMPIC B MOA, WA	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	018000AMSL	06000AMSL	USN
ONTONAGON MOA, MI	FAA, MINNEAPOLIS ARTCC	Offutt AFB	018000AMSL	00500AGL	USAF
ONTONAGON MOA, MI (XA)	FAA, MINNEAPOLIS ARTCC	Offutt AFB	018000AMSL	01501AGL	USAF
OUTLAW MOA, AZ	FAA, ALBUQUERQUE ARTCC	162 FW, AZ ANG	018000AMSL	08000AMSL	USAF(ANG)
OWENS MOA, CA	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	018000AMSL	00200AGL	USAF
OWENS MOA, CA (XA)	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	018000AMSL	01501AGL	USAF
OWENS MOA, CA (XB)	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	018000AMSL	01501AGL	USAF
OWYHEE NORTH MOA, ID	FAA, SALT LAKE CITY ARTCC	Mt. Home AFB	017999AMSL	00100AGL	USAF
OWYHEE MOA, ID	FAA, SALT LAKE CITY ARTCC	Mt. Home AFB	018000AMSL	00100AGL	USAF
OWYHEE SOUTH MOA, ID (XA)	FAA, SALT LAKE CITY ARTCC	Mt. Home AFB	017999AMSL	03000AGL	USAF
PALATKA 1 MOA, FL	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	017999AMSL	03000AGL	USN
PALATKA 2 MOA, FL	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	017999AMSL	03000AGL	USN
PAMLICO A MOA, NC	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	018000AMSL	08000AMSL	USN
PAMLICO B MOA, NC	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	018000AMSL	08000AMSL	USN
PANAMINT MOA, CA	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	018000AMSL	03001AGL	USAF
PARADISE EAST MOA, NV	FAA, SALT LAKE CITY ARTCC	Mt. Home AFB	018000AMSL	14500AMSL	USAF
PARADISE WEST MOA, OR	FAA, SALT LAKE CITY ARTCC	Mt. Home AFB	018000AMSL	14500AMSL	USAF
PANAMINT MOA, CA (XA)	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	003000AGL	00200AGL	USAF
PANAMINT MOA, CA (XB)	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	018000AMSL	01501AGL	USAF
PARADISE NORTH MOA, OR	FAA, SALT LAKE CITY ARTCC	Mt. Home AFB	017999AMSL	03000AGL	USAF

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PARADISE SOUTH MOA, NV	FAA, SALT LAKE CITY ARTCC	Mt. Home AFB	017999AMSL	03000AGL	USAF
PECOS NORTH HIGH MOA, NM	FAA, ALBUQUERQUE ARTCC	Cannon AFB	018000AMSL	11000AMSL	USAF
PECOS NORTH LOW MOA, NM	FAA, ALBUQUERQUE ARTCC	Cannon AFB	010999AMSL	00500AGL	USAF
PECOS NORTH LOW MOA, NM (XA)	FAA, ALBUQUERQUE ARTCC	Cannon AFB	001500AGL	00500AGL	USAF
PECOS SOUTH MOA, NM	FAA, ALBUQUERQUE ARTCC	Cannon AFB	018000AMSL	00500AGL	USAF
PENSACOLA NORTH MOA, FL	FAA, JACKSONVILLE ARTCC	GOMEX Range Complex	017999AMSL	10000AMSL	USN
PENSACOLA SOUTH MOA, FL	FAA, PENSACOLA TOWER	GOMEX Range Complex	017999AMSL	10000AMSL	USN
PHELPS A MOA, NC	FAA, WASHINGTON, DC ARTCC	Seymour-Johnson AFB	018000AMSL	06000AMSL	USAF
PHELPS B MOA, NC	FAA, WASHINGTON, DC ARTCC	Seymour-Johnson AFB	018000AMSL	10000AMSL	USAF
PHELPS C MOA, NC	FAA, WASHINGTON, DC ARTCC	Seymour-Johnson AFB	018000AMSL	15000AMSL	USAF
PICKETT 1 MOA, VA	FAA, WASHINGTON, DC ARTCC	Fort Pickett	006000AMSL	00500AGL	USA
PICKETT 2 MOA, VA	FAA, WASHINGTON, DC ARTCC	Fort Pickett	010000AMSL	00500AGL	USA
PICKETT 3 MOA, VA	FAA, WASHINGTON, DC ARTCC	Fort Pickett	010000AMSL	04000AMSL	USA
PIKE EAST MOA, MI	FAA, MINNEAPOLIS ARTCC		018000AMSL	00300AGL	USAF
PIKE WEST MOA, MI	FAA, MINNEAPOLIS ARTCC		018000AMSL	06000AMSL	USAF
PINE HILL EAST MOA, MS	FAA, ATLANTA ARTCC	Meridian Complex	017999AMSL	10000AMSL	USN
PINE HILL WEST MOA, MS	FAA, ATLANTA ARTCC	Meridian Complex	017999AMSL	10000AMSL	USN
PINON CANYON MOA, CO	FAA, DENVER ARTCC	Fort Carson	010000AMSL	00100AGL	USA
POINSETT MOA, SC	USAF, SHAW APP CON	Shaw AFB	002500AMSL	00300AGL	USAF
POINSETT MOA, SC (XA)	USAF, SHAW APP CON	Shaw AFB	002500AMSL	01501AGL	USAF
POINSETT MOA, SC (XB)	USAF, SHAW APP CON	Shaw AFB	002500AMSL	01501AGL	USAF
PORTERVILLE MOA, CA	FAA, LOS ANGELES ARTCC	Edwards AFB	018000AMSL	02000AGL	USAF
POWDER RIVER A MOA, MT	FAA, SALT LAKE CITY ARTCC	Edwards AFB	018000AMSL	SURFACE	USAF
POWDER RIVER A MOA, MT (XA)	FAA, SALT LAKE CITY ARTCC	Edwards AFB	018000AMSL	01501AGL	USAF
POWDER RIVER A MOA, MT (XB)	FAA, SALT LAKE CITY ARTCC	Edwards AFB	018000AMSL	01501AGL	USAF
POWDER RIVER A MOA, MT (XC)	FAA, SALT LAKE CITY ARTCC	Edwards AFB	018000AMSL	01501AGL	USAF
POWDER RIVER A MOA, MT(XD)	FAA, SALT LAKE CITY ARTCC	Edwards AFB	018000AMSL	01501AGL	USAF
POWDER RIVER B MOA, WY	FAA, DENVER ARTCC	Edwards AFB	018000AMSL	01000AGL	USAF
POWDER RIVER B MOA, WY (XA)	FAA, DENVER ARTCC	Edwards AFB	018000AMSL	01501AGL	USAF
POWDER RIVER B MOA, WY (XB)	FAA, DENVER ARTCC	Edwards AFB	018000AMSL	01501AGL	USAF
PRUITT A MOA, IL	FAA, KANSAS CITY ARTCC	Springfield	006000AMSL	00500AGL	USA
PRUITT A MOA, IL (XA)	FAA, KANSAS CITY ARTCC	Springfield	006000AMSL	01501AGL	USA
PRUITT A MOA, IL (XB)	FAA, KANSAS CITY ARTCC	Springfield	006000AMSL	01501AGL	USA
PRUITT A MOA, IL (XC)	FAA, KANSAS CITY ARTCC	Springfield	006000AMSL	01501AGL	USA

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PRUITT B MOA, IL	FAA, KANSAS CITY ARTCC	Springfield	003000AMSL	00500AGL	USA
QUAIL MOA, AZ	FAA, LOS ANGELES ARTCC	Yuma Range Complex	017999MSL	10000AMSL	USMC
R1002	CDR, NS Guantanamo Bay	Guantanamo Complex	050000AMSL	SURFACE	USN
R2101	FAA, ATLANTA ARTCC	Anniston Army Depot	005000AMSL	SURFACE	USA
R2102A	FAA, ATLANTA ARTCC	Fort McClellan	008000AMSL	SURFACE	USA
R2102B	FAA, ATLANTA ARTCC	Fort McClellan	014000AMSL	08000AMSL	USA
R2102C	FAA, ATLANTA ARTCC	Fort McClellan	FL240	14000AMSL	USA
R2103A	USA, CAIRNS APP	Fort Rucker	009999AMSL	SURFACE	USA
R2103B	FAA, JACKSONVILLE ARTCC	Fort Rucker	015000AMSL	10000AMSL	USA
R2104A	FAA, MEMPHIS ARTCC	Redstone Arsenal	012000AMSL	SURFACE	USA
R2104B	FAA, MEMPHIS ARTCC	Redstone Arsenal	002400AMSL	SURFACE	USA
R2104C	FAA, MEMPHIS ARTCC	Redstone Arsenal	012000AMSL	SURFACE	USA
R2104D	FAA, MEMPHIS ARTCC	Redstone Arsenal	FL300	12000AMSL	USA
R2104E	FAA, MEMPHIS ARTCC	Redstone Arsenal	FL300	12000AMSL	USA
R2202A	FAA, ANCHORAGE ARTCC	Fort Greely	009999AMSL	SURFACE	USA
R2202B	FAA, ANCHORAGE ARTCC	Fort Greely	009999AMSL	SURFACE	USA
R2202C	FAA, ANCHORAGE ARTCC	Fort Greely	FL310	10000AMSL	USA
R2202D	FAA, ANCHORAGE ARTCC	Fort Greely	UNLTD	FL310	USA
R2203A	FAA, ANCHORAGE TWR	Fort Richardson	011000AMSL	SURFACE	USA
R2203B	FAA, ANCHORAGE TWR	Fort Richardson	011000AMSL	SURFACE	USA
R2203C	FAA, ANCHORAGE TWR	Fort Richardson	005000AMSL	SURFACE	USA
R2205	FAA, FAIRBANKS APP	Fort Richardson	020000AMSL	SURFACE	USA
R2206	FAA, ANCHORAGE ARTCC	13th Missile Wing	008800AMSL	SURFACE	USAF
R2211	FAA, ANCHORAGE ARTCC	Eielson AFB	FL310	SURFACE	USAF
R2301E	FAA, ALBUQUERQUE ARTCC	Luke AFB	FL800	SURFACE	USAF
R2301W	FAA, LOS ANGELES ARTCC	Yuma Range Complex	FL800	SURFACE	USMC
R2302	FAA, ALBUQUERQUE ARTCC	Navajo Ordnance Depot	010000AMSL	SURFACE	USA
R2303A	FAA, ALBUQUERQUE ARTCC	Fort Huachuca	015000AMSL	SURFACE	USA
R2303B	FAA, ALBUQUERQUE ARTCC	Fort Huachuca	FL300	08000AMSL	USA
R2303C	FAA, ALBUQUERQUE ARTCC	Fort Huachuca	FL300	15000AMSL	USA
R2304	FAA, ALBUQUERQUE ARTCC	Luke AFB	FL240	SURFACE	USAF
R2305	FAA, ALBUQUERQUE ARTCC	Luke AFB	FL240	SURFACE	USAF
R2306A	FAA, LOS ANGELES ARTCC	Yuma Proving Ground	FL800	SURFACE	USA
R2306B	FAA, LOS ANGELES ARTCC	Yuma Proving Ground	FL800	SURFACE	USA

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R2306C	FAA, LOS ANGELES ARTCC	Yuma Proving Ground	FL400	SURFACE	USA
R2306D	FAA, LOS ANGELES ARTCC	Yuma Proving Ground	FL230	SURFACE	USA
R2306E	FAA, LOS ANGELES ARTCC	Yuma Proving Ground	FL800	SURFACE	USA
R2307	FAA, LOS ANGELES ARTCC	Yuma Proving Ground	UNLTD	SURFACE	USA
R2308A	FAA, LOS ANGELES ARTCC	Yuma Proving Ground	FL800	01500AGL	USA
R2308B	FAA, LOS ANGELES ARTCC	Yuma Proving Ground	FL800	SURFACE	USA
R2308C	FAA, LOS ANGELES ARTCC	Yuma Proving Ground	FL230	01500AGL	USA
R2309	FAA, LOS ANGELES ARTCC	Yuma Proving Ground	015000AMSL	SURFACE	USAF
R2310A	FAA, ALBUQUERQUE ARTCC	Florence Training Site	010000AMSL	SURFACE	USA
R2310B	FAA, ALBUQUERQUE ARTCC	Florence Training Site	017000AMSL	10000AMSL	USA
R2310C	FAA, ALBUQUERQUE ARTCC	Florence Training Site	FL350	17000AMSL	USA
R2311	YUMA APP, YUMA MCAS	Yuma Proving Ground	003500AMSL	SURFACE	USA
R2312	LIBBY AAF TWR	McChord AFB	014999AMSL	SURFACE	USAF
R2401A	FAA, MEMPHIS ARTCC	Chaffee	FL300	SURFACE	USA
R2401B	FAA, MEMPHIS ARTCC	Chaffee	FL300	SURFACE	USA
R2402A	FAA, MEMPHIS ARTCC	Chaffee	030000AMSL	SURFACE	USA
R2402B	FAA, MEMPHIS ARTCC	Chaffee	FL220	10000AMSL	USA
R2402C	FAA, MEMPHIS ARTCC	Chaffee	FL220	13000AMSL	USA
R2403A	FAA, MEMPHIS ARTCC	Arkansas ARNG	016000AMSL	SURFACE	USA(ARNG)
R2403B	FAA, MEMPHIS ARTCC	Arkansas ARNG	016000AMSL	SURFACE	USA(ARNG)
R2501E	FAA, LOS ANGELES ARTCC	Twentynine Palms Range Complex	UNLTD	SURFACE	USMC
R2501N	FAA, LOS ANGELES ARTCC	Twentynine Palms Range Complex	UNLTD	SURFACE	USMC
R2501S	FAA, LOS ANGELES ARTCC	Twentynine Palms Range Complex	UNLTD	SURFACE	USMC
R2501W	FAA, LOS ANGELES ARTCC	Twentynine Palms Range Complex	UNLTD	SURFACE	USMC
R2502A	FAA, HI-DESERT TRACON, EDWARDS AFB	Fort Irwin	16000AMSL	SURFACE	USA
R2502E	FAA, HI-DESERT TRACON, EDWARDS AFB	Fort Irwin	UNLTD	SURFACE	USA
R2502N	FAA, HI-DESERT TRACON, EDWARDS AFB	Fort Irwin	UNLTD	SURFACE	USA
R2503A	FAA, LOS ANGELES ARTCC	Camp Pendleton Range Complex	002000AMSL	SURFACE	USMC
R2503B	FAA, LOS ANGELES ARTCC	Camp Pendleton Range Complex	015000AMSL	SURFACE	USMC
R2503C	FAA, LOS ANGELES ARTCC	Camp Pendleton Range Complex	FL270	15000AMSL	USMC
R2503D	FAA, SOCAL TRACON	Camp Pendleton Range Complex	11000AMSL	002000AMSL	USMC
R2504A	FAA, OAKLAND ARTCC	Camp Roberts	06000AMSL	SURFACE	USA
R2504B	FAA, OAKLAND ARTCC	Camp Roberts	015000AMSL	06000AMSL	USA
R2505	FAA, HI-DESERT TRACON, EDWARDS AFB	China Lake Range Complex	UNLTD	SURFACE	USN

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R2506	FAA, HI-DESERT TRACON, EDWARDS AFB	China Lake Range Complex	006000AMSL	SURFACE	USN
R2507E	FAA, LOS ANGELES ARTCC	Yuma Range Complex	FL400	SURFACE	USMC
R2507N	FAA, LOS ANGELES ARTCC	Yuma Range Complex	FL400	SURFACE	USMC
R2507S	FAA, LOS ANGELES ARTCC	Yuma Range Complex	FL400	SURFACE	USMC
R2508	FAA, HI-DESERT TRACON, EDWARDS AFB	R-2508 Complex	UNLTD	FL200	USAF
R2510A	FAA, LOS ANGELES ARTCC	El Centro Range Complex	015000AMSL	SURFACE	USN
R2510B	FAA, LOS ANGELES ARTCC	El Centro Range Complex	FL400	15000AMSL	USN
R2512	FAA, LOS ANGELES ARTCC	El Centro Range Complex	FL230	SURFACE	USN
R2513	FAA, OAKLAND ARTCC	Fort Hunter-Leggett	FL240	SURFACE	USA
R2515	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	UNLTD	SURFACE	USAF
R2516	FAA, LOS ANGELES ARTCC	Vandenberg AFB	UNLTD	SURFACE	USAF
R2517	FAA, LOS ANGELES ARTCC	Vandenberg AFB	UNLTD	SURFACE	USAF
R2519	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	UNLTD	SURFACE	USN
R2524	FAA, HI-DESERT TRACON, EDWARDS AFB	China Lake Range Complex	UNLTD	SURFACE	USN
R2530	FAA, OAKLAND ARTCC	Sierra Army Deport	008600AMSL	SURFACE	USA
R2534A	FAA, LOS ANGELES ARTCC	Vandenberg AFB	UNLTD	00500AGL	USAF
R2534B	FAA, LOS ANGELES ARTCC	Vandenberg AFB	UNLTD	00500AGL	USAF
R2535A	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	100000AMSL	SURFACE	USN
R2535B	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	100000AMSL	SURFACE	USN
R2601A	FAA, DENVER ARTCC	Fort Carson	012499AMSL	SURFACE	USA
R2601B	FAA, DENVER ARTCC	Fort Carson	022499AMSL	12500AMSL	USA
R2601C	FAA, DENVER ARTCC	Fort Carson	034999AMSL	22500AMSL	USA
R2601D	FAA, DENVER ARTCC	Fort Carson	059999AMSL	35000AMSL	USA
R2602	FAA, DENVER ARTCC	Colorado Springs Training Site	SURFACE	01000AGL	USAF
R2901A	FAA, MIAMI ARTCC	Avon Park	014000AMSL	SURFACE	USAF
R2901B	FAA, MIAMI ARTCC	Avon Park	FL180	14000AMSL	USAF
R2901C	FAA, MIAMI ARTCC	Avon Park	014000AMSL	SURFACE	USAF
R2901D	FAA, MIAMI ARTCC	Avon Park	004000AMSL	00500AMSL	USAF
R2901E	FAA, MIAMI ARTCC	Avon Park	004000AMSL	01000AMSL	USAF
R2901F	FAA, MIAMI ARTCC	Avon Park	005000AMSL	04000AMSL	USAF
R2901G	FAA, MIAMI ARTCC	Avon Park	005000AMSL	SURFACE	USAF
R2901H	FAA, MIAMI ARTCC	Avon Park	004000AMSL	01000AMSL	USAF
R2901I	FAA, MIAMI ARTCC	Avon Park	004000AMSL	01500AMSL	USAF
R2901M	FAA, MIAMI ARTCC	Avon Park	014000AMSL	04000AMSL	USAF

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R2901N	FAA, MIAMI ARTCC	Avon Park	014000AMSL	04000AMSL	USAF
R2903A	FAA, JACKSONVILLE ARTCC		022999AMSL	SURFACE	USAF
R2903C	FAA, JACKSONVILLE TRACON		007000AMSL	SURFACE	USAF
R2903D	FAA, JACKSONVILLE TRACON		005000AMSL	SURFACE	USAF
R2904A	FAA, JACKSONVILLE TRACON		001799AMSL	SURFACE	USAF
R2905A	TYNDALL AFB RADAR APP	Tyndall AFB	010000AMSL	SURFACE	USAF
R2905B	TYNDALL AFB RADAR APP	Tyndall AFB	010000AMSL	SURFACE	USAF
R2906	FAA, JACKSONVILLE TRACON	Jacksonville Range Complex	014000AMSL	SURFACE	USN
R2907A	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	FL230	SURFACE	USN
R2907B	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	009000AMSL	SURFACE	USN
R2907C	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	001999AMSL	00500AMSL	USN
R2908	FAA, PENSACOLA TRACON	Jacksonville Range Complex	012000AMSL	SURFACE	USN
R2910	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	FL230	SURFACE	USN
R2910(A)	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	009000AMSL	SURFACE	USN
R2910(B)	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	009000AMSL	SURFACE	USN
R2910(C)	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	006000AMSL	SURFACE	USN
R2914A	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF
R2910D	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	FL230	02000AMSL	USN
R2910E	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	002000AMSL	00500AMSL	USN
R2914B	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	08500AMSL	USAF
R2915A	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF
R2915B	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF
R2915C	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	08500AMSL	USAF
R2916	FAA, MIAMI ARTCC	Tyndall AFB	014000AMSL	SURFACE	USAF
R2917	USAF, EGLIN AFB APP	Eglin AFB	022999AMSL	SURFACE	USAF
R2918	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF
R2919A	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF
R2919B	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	08500AMSL	USAF
R2932	FAA, MIAMI ARTCC	Cape Canaveral Range Complex	004999AMSL	SURFACE	USAF
R2933	FAA, MIAMI ARTCC	Cape Canaveral Range Complex	UNLTD	05000AMSL	USAF
R2934	FAA, MIAMI ARTCC	Cape Canaveral Range Complex	UNLTD	SURFACE	USAF
R2935	FAA, MIAMI ARTCC	Cape Canaveral Range Complex	UNLTD	11000AMSL	USAF
R3002A	FAA, ATCT, COLUMBUS	Fort Benning	004000AMSL	SURFACE	USA
R3002B	FAA, ATCT, COLUMBUS	Fort Benning	008000AMSL	04000AMSL	USA

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R3002C	FAA, ATCT, COLUMBUS	Fort Benning	014000AMSL	08000AMSL	USA
R3002D	FAA, ATCT, COLUMBUS	Fort Benning	008000AMSL	SURFACE	USA
R3002E	FAA, ATCT, COLUMBUS	Fort Benning	014000AMSL	08000AMSL	USA
R3002F	FAA, ATLANTA ARTCC	Fort Benning	FL250	14000AMSL	USA
R3002G	FAA, ATLANTA TRACON	Fort Benning	004000AMSL	SURFACE	USA
R3004A	FAA, ATLANTA ARTCC	Fort Gordon	007000AMSL	SURFACE	USA
R3004B	FAA, ATLANTA ARTCC	Fort Gordon	016000AMSL	007001AMSL	USA
R3005A	FAA, JACKSONVILLE ARTCC	Fort Stewart	FL290	SURFACE	USA
R3005B	FAA, JACKSONVILLE ARTCC	Fort Stewart	FL290	SURFACE	USA
R3005C	FAA, JACKSONVILLE ARTCC	Fort Stewart	FL290	SURFACE	USA
R3005D	FAA, JACKSONVILLE ARTCC	Fort Stewart	FL290	SURFACE	USA
R3005E	FAA, JACKSONVILLE ARTCC	Fort Stewart	FL290	SURFACE	USA
R3007A	FAA, JACKSONVILLE ARTCC	Townsend	005000AMSL	01500AGL	USAF(ANG)
R3007B	FAA, JACKSONVILLE ARTCC	Townsend	005000AMSL	00500AGL	USAF(ANG)
R3007C	FAA, JACKSONVILLE ARTCC	Townsend	013000AMSL	00100AGL	USAF(ANG)
R3007D	FAA, JACKSONVILLE ARTCC	Townsend	013000AMSL	01200AGL	USAF(ANG)
R3008A	USAF, VALDOSTA APP	Moody AFB	010000AMSL	SURFACE	USAF
R3008B	USAF, VALDOSTA APP	Moody AFB	010000AMSL	00100AGL	USAF
R3008C	USAF, VALDOSTA APP	Moody AFB	010000AMSL	00500AGL	USAF
R3008C(A)	USAF, VALDOSTA APP	Moody AFB	001500AGL	SURFACE	USAF
R3008D	USAF, VALDOSTA APP	Moody AFB	022999AMSL	10000AMSL	USAF
R3101	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	UNLTD	SURFACE	USN
R3103	FAA, HONOLULU CERAP	Pohakuloa Training Area	030000AMSL	SURFACE	USA
R3107	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	FL180	SURFACE	USN
R3109A	FAA, HONOLULU TWR	Schofield-Makua	008999AMSL	SURFACE	USA
R3109B	FAA, HONOLULU TWR	Schofield-Makua	018999AMSL	09000AMSL	USA
R3109C	FAA, HONOLULU TWR	Schofield-Makua	008999AMSL	SURFACE	USA
R3110A	FAA, HONOLULU TWR	Schofield-Makua	008999AMSL	SURFACE	USA
R3110B	FAA, HONOLULU TWR	Schofield-Makua	018999AMSL	09000AMSL	USA
R3110C	FAA, HONOLULU TWR	Schofield-Makua	008999AMSL	SURFACE	USA
R3202(H)	FAA, SALT LAKE CITY ARTCC	Mountain Home AFB	FL290	FL180	USAF
R3202(L)	FAA, SALT LAKE CITY ARTCC	Mountain Home AFB	018000AMSL	SURFACE	USAF
R3203D	FAA, SALT LAKE CITY ARTCC	Boise	FL220	SURFACE	USA
R3203A	FAA, SALT LAKE CITY ARTCC	Mountain Home AFB	015000AMSL	SURFACE	USAF

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R3203B	FAA, SALT LAKE CITY ARTCC	Mountain Home AFB	FL220	15000AMSL	USAF
R3203C	FAA, SALT LAKE CITY ARTCC	Mountain Home AFB	006000AMSL	SURFACE	USAF
R3204A	FAA, SALT LAKE CITY ARTCC	Mountain Home AFB	000100AGL	SURFACE	USAF
R3204B	FAA, SALT LAKE CITY ARTCC	Mountain Home AFB	018000AMSL	00100AGL	USAF
R3204C	FAA, SALT LAKE CITY ARTCC	Mountain Home AFB	FL290	FL180	USAF
R3401A	FAA, INDIANAPOLIS ARTCC	Camp Atterbury	FL400	SURFACE	USA
R3401B	FAA, INDIANAPOLIS ARTCC	Camp Atterbury	014000AMSL	01200AGL	USA
R3403A	FAA, INDIANAPOLIS ARTCC	Camp Atterbury	FL430	SURFACE	USA
R3403B	FAA, INDIANAPOLIS ARTCC	Camp Atterbury	FL180	01200AGL	USA
R3404	FAA, HULMAN TWR, TERRE HAUTE	Naval Ammunitions Depot, Crane	004100AMSL	SURFACE	USN
R3405	FAA, HULMAN TWR, TERRE HAUTE	Naval Ammunitions Depot, Crane	001600AMSL	SURFACE	USN
R3602A	FAA, KANSAS CITY ARTCC	Fort Riley	FL290	SURFACE	USA
R3602B	FAA, KANSAS CITY ARTCC	Fort Riley	FL290	SURFACE	USA
R3701	USA, CAMPBELL AAF APP	Fort Campbell	005000AMSL	SURFACE	USA
R3702A	FAA, MEMPHIS ARTCC	Fort Campbell	006000AMSL	SURFACE	USA
R3702B	FAA, MEMPHIS ARTCC	Fort Campbell	FL220	06000AMSL	USA
R3702C	FAA, MEMPHIS ARTCC	Fort Campbell	FL270	FL220	USA
R3704A	FAA, STANDIFORD TWR, LOUISVILLE	Fort Knox	010000AMSL	SURFACE	USA
R3704B	FAA, STANDIFORD TWR, LOUISVILLE	Fort Knox	FL220	10000AMSL	USA
R3801A	FAA, HOUSTON ARTCC	Barksdale AFB	010000AMSL	SURFACE	USAF
R3801B	FAA, HOUSTON ARTCC	Barksdale AFB	FL180	10000AMSL	USAF
R3801C	FAA, HOUSTON ARTCC	Barksdale AFB	FL230	FL180	USAF
R3803A	FAA, HOUSTON ARTCC	Fort Polk	FL180	SURFACE	USA
R3803B	FAA, HOUSTON ARTCC	Fort Polk	034999AMSL	FL180	USA
R3804A	FAA, HOUSTON ARTCC	Fort Polk	FL180	SURFACE	USA
R3804B	FAA, HOUSTON ARTCC	Fort Polk	003000AMSL	SURFACE	USA
R3804C	FAA, HOUSTON ARTCC	Fort Polk	034999AMSL	FL180	USA
R4001A	FAA, WASHINGTON, DC ARTCC	Aberdeen Proving Ground	UNLTD	SURFACE	USA
R4001B	FAA, WASHINGTON, DC ARTCC	Aberdeen Proving Ground	010000AMSL	SURFACE	USA
R4001C	FAA, WASHINGTON, DC ARTCC	Aberdeen Proving Ground	010000AMSL	SURFACE	USA
R4002	FAA, WASHINGTON, DC ARTCC	Patuxent River Complex	FL200	SURFACE	USN
R4005A	FAA, WASHINGTON, DC ARTCC	Patuxent River Complex	024999AMSL	SURFACE	USN
R4005B	FAA, WASHINGTON, DC ARTCC	Patuxent River Complex	024999AMSL	SURFACE	USN
R4005C	FAA, WASHINGTON, DC ARTCC	Patuxent River Complex	024999AMSL	SURFACE	USN

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R4005D	FAA, WASHINGTON, DC ARTCC	Patuxent River Complex	024999AMSL	SURFACE	USN
R4006	FAA, WASHINGTON, DC ARTCC	Patuxent River Complex	024999AMSL	03500AMSL	USN
R4007	FAA, WASHINGTON, DC ARTCC	Patuxent River Complex	004999AMSL	SURFACE	USN
R4008	FAA, WASHINGTON, DC ARTCC	Patuxent River Complex	FL850	FL250	USN
R4009	FAA, WASHINGTON, DC ARTCC	FAA, WASHINGTON, DC ARTCC	012500AMSL	05000AMSL	USN
R4101	FAA, CAPE APP	Camp Edwards	009000AMSL	SURFACE	USA
R4102A	FAA, BOSTON ARTCC	Devens Reserve Forces Training Area	001999AMSL	SURFACE	USA
R4102B	FAA, BOSTON ARTCC	Devens Reserve Forces Training Area	003995AMSL	02000AMSL	USA
R4105A	FAA, CAPE APP	Barnes ANGB	009999AMSL	SURFACE	USAF
R4105B	FAA, CAPE APP	Barnes ANGB	018000AMSL	10000AMSL	USAF
R4201A	FAA, MINNEAPOLIS ARTCC	Camp Grayling	FL230	SURFACE	USA
R4201B	FAA, MINNEAPOLIS ARTCC	Camp Grayling	009000AMSL	SURFACE	USA
R4202	FAA, MINNEAPOLIS ARTCC	Camp Grayling	008200AMSL	SURFACE	USA
R4207	FAA, MINNEAPOLIS ARTCC	Phelps-Collins ANGB	FL450	SURFACE	USAF(ANG)
R4301	FAA, MINNEAPOLIS ARTCC	Camp Ripley	FL270	SURFACE	USA
R4305	FAA, MINNEAPOLIS ARTCC	Offutt AFB	FL450	SURFACE	USAF
R4401A	FAA, HOUSTON ARTCC	Camp Shelby	004000AMSL	SURFACE	USA(ARNG)
R4401B	FAA, HOUSTON ARTCC	Camp Shelby	010000AMSL	04000AMSL	USA(ARNG)
R4401C	FAA, HOUSTON ARTCC	Camp Shelby	FL180	010000AMSL	USA(ARNG)
R4401D	FAA, HOUSTON ARTCC	Camp Shelby	FL230	FL180	USA(ARNG)
R4401E	FAA, HOUSTON ARTCC	Camp Shelby	FL290	FL230	USA(ARNG)
R4404A	FAA, MEMPHIS ARTCC	Meridian Complex	011500AMSL	SURFACE	USN
R4404B	FAA, MEMPHIS ARTCC	Meridian Complex	011500AMSL	01200AGL	USN
R4404C	FAA, MEMPHIS ARTCC	Meridian Complex	014500AMSL	11500AMSL	USN
R4501A	FAA, KANSAS CITY ARTCC	Fort Leonard Wood	002199AMSL	SURFACE	USA
R4501B(A)	FAA, KANSAS CITY ARTCC	Fort Leonard Wood	002200AMSL	SURFACE	USA
R4501B(B)	FAA, KANSAS CITY ARTCC	Fort Leonard Wood	001500AMSL	SURFACE	USA
R4501C	FAA, KANSAS CITY ARTCC	Fort Leonard Wood	005000AMSL	02200AMSL	USA
R4501D	FAA, KANSAS CITY ARTCC	Fort Leonard Wood	012000AMSL	05000AMSL	USA
R4501E	FAA, KANSAS CITY ARTCC	Fort Leonard Wood	FL180	12000AMSL	USA
R4501F	FAA, KANSAS CITY ARTCC	Fort Leonard Wood	003200AMSL	SURFACE	USA
R4501H	FAA, KANSAS CITY ARTCC	Fort Leonard Wood	003200AMSL	SURFACE	USA
R4803	FAA, OAKLAND ARTCC	Fallon Range Complex	018000AMSL	SURFACE	USN
R4804A	FAA, OAKLAND ARTCC	Fallon Range Complex	018000AMSL	SURFACE	USN

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R4804B	FAA, OAKLAND ARTCC	Fallon Range Complex	FL350	FL180	USN
R4806E	FAA, LOS ANGELES ARTCC	Nellis AFB	UNLTD	00100AGL	USAF
R4806W	FAA, LOS ANGELES ARTCC	Nellis AFB	UNLTD	SURFACE	USAF
R4807A	FAA, LOS ANGELES ARTCC	Nellis AFB	UNLTD	SURFACE	USAF
R4807B	FAA, LOS ANGELES ARTCC	Nellis AFB	UNLTD	SURFACE	USAF
R4808N	FAA, LOS ANGELES ARTCC	Nellis AFB	UNLTD	SURFACE	DOE
R4808S	FAA, LOS ANGELES ARTCC	Nellis AFB	UNLTD	SURFACE	DOE
R4809	FAA, LOS ANGELES ARTCC	Nellis AFB	UNLTD	SURFACE	DOE
R4810	FAA, OAKLAND ARTCC	Fallon Range Complex	017000AMSL	SURFACE	USN
R4811	FAA, OAKLAND ARTCC	Hawthorne Army Ammunition Plant	015000AMSL	SURFACE	USA
R4812	FAA, OAKLAND ARTCC	Fallon Range Complex	018000AMSL	SURFACE	USN
R4813A	FAA, OAKLAND ARTCC	Fallon Range Complex	018000AMSL	SURFACE	USN
R4813B	FAA, OAKLAND ARTCC	Fallon Range Complex	FL350	FL180	USN
R4816N	FAA, OAKLAND ARTCC	Fallon Range Complex	018000AMSL	01500AGL	USN
R4816S	FAA, OAKLAND ARTCC	Fallon Range Complex	018000AMSL	00500AGL	USN
R5001A	FAA, NEW YORK ARTCC	Fort Dix	004000AMSL	SURFACE	USA
R5001B	FAA, NEW YORK ARTCC	Fort Dix	008000AMSL	04000AMSL	USA
R5103A	FAA, ALBUQUERQUE ARTCC	Fort Bliss	018000AMSL	SURFACE	USA
R5103B	FAA, ALBUQUERQUE ARTCC	Fort Bliss	012500AMSL	SURFACE	USA
R5103C	FAA, ALBUQUERQUE ARTCC	Fort Bliss	UNLTD	SURFACE	USA
R5104A	FAA, ALBUQUERQUE ARTCC	Cannon AFB	018000AMSL	SURFACE	USAF
R5104B	FAA, ALBUQUERQUE ARTCC	Cannon AFB	023000AMSL	18000AMSL	USAF
R5105	FAA, ALBUQUERQUE ARTCC	Cannon AFB	010000AMSL	SURFACE	USAF
R5107A	FAA, ALBUQUERQUE ARTCC	Fort Bliss	UNLTD	SURFACE	USA
R5107B	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	UNLTD	SURFACE	USA
R5107C	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	UNLTD	09000AMSL	USA
R5107D	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	022000AMSL	SURFACE	USA
R5107E	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	UNLTD	SURFACE	USA
R5107F	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	FL450	FL240	USA
R5107G	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	FL450	FL240	USA
R5107H	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	009000AMSL	SURFACE	USA
R5107J	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	009000AMSL	SURFACE	USA
R5107K	FAA, ALBUQUERQUE ARTCC	Camp Atterbury	UNLTD	SURFACE	USA
R5109A	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	UNLTD	24000AMSL	USA

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R5109B	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	UNLTD	24000AMSL	USA
R5111A	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	UNLTD	13000AMSL	USA
R5111B	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	013000AMSL	SURFACE	USA
R5111C	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	UNLTD	13000AMSL	USA
R5111D	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	012999AMSL	SURFACE	USA
R5113	FAA, ALBUQUERQUE ARTCC	Office of Naval Research, Atmospheric Sciences	FL450	SURFACE	USN
R5115	FAA, ALBUQUERQUE ARTCC	McChord AFB	015000AMSL	SURFACE	USAF
R5117	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	UNLTD	SURFACE	USA
R5119	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	UNLTD	FL350	USA
R5121	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	UNLTD	FL200	USA
R5123	FAA, ALBUQUERQUE ARTCC	White Sands Missile Range	UNLTD	SURFACE	USA
R5201	FAA, BOSTON ARTCC	Fort Drum	023000AMSL	SURFACE	USA
R5206	FAA, NEW YORK APP	West Point	005000AMSL	SURFACE	USA
R5301	FAA, WASHINGTON ARTCC	VACAPES Range Complex	014000AMSL	SURFACE	USN
R5302A	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	014000AMSL	SURFACE	USN
R5302B	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	014000AMSL	00100AGL	USN
R5302C	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	003000AMSL	00100AGL	USN
R5303A	USMC, CHERRY POINT APP	Cherry Point/Camp Lejeune Range Complex	006999AMSL	SURFACE	USMC
R5303B	USMC, CHERRY POINT APP	Cherry Point/Camp Lejeune Range Complex	009999AMSL	07000AMSL	USMC
R5303C	FAA, WASHINGTON, DC ARTCC	Cherry Point/Camp Lejeune Range Complex	017999MSL	10000AMSL	USMC
R5304A	USMC, CHERRY POINT APP	Cherry Point/Camp Lejeune Range Complex	006999AMSL	SURFACE	USMC
R5304B	USMC, CHERRY POINT APP	Cherry Point/Camp Lejeune Range Complex	009999AMSL	07000AMSL	USMC
R5304C	FAA, WASHINGTON, DC ARTCC	Cherry Point/Camp Lejeune Range Complex	017999MSL	10000AMSL	USMC
R5306A	USMC, CHERRY POINT APP	Cherry Point/Camp Lejeune Range Complex	018000AMSL	SURFACE	USMC
R5306C	USMC, CHERRY POINT APP	Cherry Point/Camp Lejeune Range Complex	017999MSL	01200AMSL	USMC
R5306D	USMC, CHERRY POINT APP	Cherry Point/Camp Lejeune Range Complex	017999MSL	SURFACE	USMC
R5306E	USMC, CHERRY POINT APP	Cherry Point/Camp Lejeune Range Complex	017999MSL	SURFACE	USMC
R5311A	FAA, WASHINGTON, DC ARTCC	Fort Bragg	006999AMSL	SURFACE	USA
R5311B	FAA, WASHINGTON, DC ARTCC	Fort Bragg	011999AMSL	07000AMSL	USA
R5311C	FAA, WASHINGTON, DC ARTCC	Fort Bragg	028999AMSL	12000AMSL	USA
R5313A	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	018000AMSL	SURFACE	USN
R5313B	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	013000AMSL	00100AGL	USN
R5313C	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	013000AMSL	00100AGL	USN
R5313D	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	013000AMSL	00500AGL	USN

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R5314A	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	FL205	SURFACE	USAF
R5314B	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	FL205	00500AGL	USAF
R5314C	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	FL205	00500AGL	USAF
R5314D	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	FL205	SURFACE	USAF
R5314E	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	FL205	SURFACE	USAF
R5314F	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	FL205	00500AGL	USAF
R5314H	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	010000AMSL	00500AGL	USAF
R5314J	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	006000AMSL	01000AGL	USAF
R5401	FAA, MINNEAPOLIS ARTCC	Camp Grafton	005000AMSL	SURFACE	USA(ARNG)
R5402	FAA, MINNEAPOLIS ARTCC	Camp Grafton	009999AMSL	00500AGL	USA(ARNG)
R5403A	FAA, MINNEAPOLIS ARTCC	Camp Grafton	009999AMSL	08000AMSL	USA(ARNG)
R5403B	FAA, MINNEAPOLIS ARTCC	Camp Grafton	013999AMSL	10000AMSL	USA(ARNG)
R5403C	FAA, MINNEAPOLIS ARTCC	Camp Grafton	017999AMSL	14000AMSL	USA(ARNG)
R5403D	FAA, MINNEAPOLIS ARTCC	Camp Grafton	011999AMSL	10000AMSL	USA(ARNG)
R5403E	FAA, MINNEAPOLIS ARTCC	Camp Grafton	013999AMSL	12000AMSL	USA(ARNG)
R5403F	FAA, MINNEAPOLIS ARTCC	Camp Grafton	017999AMSL	14000AMSL	USA(ARNG)
R5502A	FAA, CLEVELAND ARTCC	Camp Perry	05000AMSL	SURFACE	USA(ARNG)
R5502B	FAA, CLEVELAND ARTCC	Camp Perry	FL230	SURFACE	USA(ARNG)
R5601A	FAA, FORT WORTH ARTCC	Fort Sill	FL400	SURFACE	USA
R5601B	FAA, FORT WORTH ARTCC	Fort Sill	FL400	SURFACE	USA
R5601C	FAA, FORT WORTH ARTCC	Fort Sill	FL400	SURFACE	USA
R5601D	FAA, FORT WORTH ARTCC	Fort Sill	FL400	00500AGL	USA
R5601E	FAA, FORT WORTH ARTCC	Fort Sill	006000AMSL	00500AGL	USA
R5601F(A)	FAA, FORT WORTH ARTCC	Fort Sill	FL400	00500AGL	USA
R5601F(B)	FAA, FORT WORTH ARTCC	Fort Sill	FL400	05500AMSL	USA
R5601F(C)	FAA, FORT WORTH ARTCC	Fort Sill	FL400	00500AGL	USA
R5601F(D)	FAA, FORT WORTH ARTCC	Fort Sill	FL400	03500AMSL	USA
R5701(A)	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	FL200	SURFACE	USN
R5701(B)	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	010000AMSL	SURFACE	USN
R5701(C)	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	006000AMSL	SURFACE	USN
R5701(D)	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	010000AMSL	SURFACE	USN
R5701(E)	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	006000AMSL	SURFACE	USN
R5706	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	010000AMSL	03500AMSL	USN
R5801	FAA, WASHINGTON, DC ARTCC	Letterkenny Ordnance Depot	004000AMSL	SURFACE	USA

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R5802A	FAA, NEW YORK ARTCC	Fort Indiantown Gap	005000AMSL	00200AGL	USA
R5802B	FAA, NEW YORK ARTCC	Fort Indiantown Gap	013000AMSL	SURFACE	USA
R5802C	FAA, NEW YORK ARTCC	Fort Indiantown Gap	016999AMSL	00500AGL	USA
R5802D	FAA, NEW YORK ARTCC	Fort Indiantown Gap	021999AMSL	17000AMSL	USA
R5802E	FAA, NEW YORK ARTCC	Fort Indiantown Gap	FL250	FL220	USA
R5803	FAA, WASHINGTON, DC ARTCC	Letterkenny Ordnance Depot	004000AMSL	SURFACE	USA
R6001A	FAA, JACKSONVILLE ARTCC	Fort Jackson	003200AMSL	SURFACE	USA
R6001B	FAA, JACKSONVILLE ARTCC	Fort Jackson	FL230	03200AMSL	USA
R6002A	FAA, JACKSONVILLE ARTCC	Shaw AFB	012999AMSL	SURFACE	USAF
R6002B	FAA, JACKSONVILLE ARTCC	Shaw AFB	018000AMSL	13000AMSL	USAF
R6002C	FAA, JACKSONVILLE ARTCC	Shaw AFB	FL230	FL180	USAF
R6302A	FAA, HOUSTON ARTCC	Fort Hood	FL300	SURFACE	USA
R6302B	FAA, HOUSTON ARTCC	Fort Hood	011000AMSL	SURFACE	USA
R6302C	FAA, HOUSTON ARTCC	Fort Hood	FL300	SURFACE	USA
R6302D	FAA, HOUSTON ARTCC	Fort Hood	FL300	SURFACE	USA
R6302E	FAA, HOUSTON ARTCC	Fort Hood	FL450	FL300	USA
R6312(A)	FAA, HOUSTON ARTCC	GOMEX Range Complex	023000AMSL	01000AGL	USN
R6312(B)	FAA, HOUSTON ARTCC	GOMEX Range Complex	023000AMSL	SURFACE	USN
R6312(C)	FAA, HOUSTON ARTCC	GOMEX Range Complex	023000AMSL	SURFACE	USN
R6316	FAA, HOUSTON ARTCC	McChord AFB	015000AMSL	SURFACE	USAF
R6317	FAA, HOUSTON ARTCC	McChord AFB	015000AMSL	SURFACE	USAF
R6318	FAA, ALBUQUERQUE ARTCC	McChord AFB	014000AMSL	SURFACE	USAF
R6402A	FAA, SALT LAKE CITY ARTCC	Hill AFB	FL580	SURFACE	USAF
R6402B	FAA, SALT LAKE CITY ARTCC	Hill AFB	FL580	00100AGL	USAF
R6403	FAA, SALT LAKE CITY ARTCC	Tooele Army Depot	009000AMSL	SURFACE	USA
R6404A	FAA, SALT LAKE CITY ARTCC	Hill AFB	FL580	SURFACE	USAF
R6404B	FAA, SALT LAKE CITY ARTCC	Hill AFB	013000AMSL	SURFACE	USAF
R6404C	FAA, SALT LAKE CITY ARTCC	Hill AFB	FL280	00100AGL	USAF
R6404D	FAA, SALT LAKE CITY ARTCC	Hill AFB	FL250	13000AMSL	USAF
R6405	FAA, SALT LAKE CITY ARTCC	Hill AFB	FL580	00100AGL	USAF
R6406A	FAA, SALT LAKE CITY ARTCC	Hill AFB	FL580	SURFACE	USAF
R6406B	FAA, SALT LAKE CITY ARTCC	Hill AFB	FL580	00100AGL	USAF
R6407	FAA, SALT LAKE CITY ARTCC	Hill AFB	FL580	SURFACE	USAF
R6412A	FAA, SALT LAKE CITY TRACON	Camp Williams	009000AMSL	SURFACE	USA(ARNG)

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R6412B	FAA, SALT LAKE CITY TRACON	Camp Williams	010000AMSL	09000AMSL	USA(ARNG)
R6412C	FAA, SALT LAKE CITY TRACON	Camp Williams	009000AMSL	SURFACE	USA(ARNG)
R6412D	FAA, SALT LAKE CITY TRACON	Camp Williams	010000AMSL	09000AMSL	USA(ARNG)
R6413	FAA, DENVER ARTCC	White Sands Missile Range	UNLTD	SURFACE	USAF
R6601	FAA, RICHMOND TWR	Fort A.P. Hill	005000AMSL	SURFACE	USA
R6602A	FAA, WASHINGTON, DC ARTCC	Fort Lee	003999AMSL	SURFACE	USA
R6602B	FAA, WASHINGTON, DC ARTCC	Fort Lee	010999AMSL	04000AMSL	USA
R6602C	FAA, WASHINGTON, DC ARTCC	Fort Lee	018000AMSL	11000AMSL	USA
R6606	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	FL510	SURFACE	USN
R6608A	FAA, POTOMAC TRACON	Quantico Range Complex	010000AMSL	SURFACE	USMC
R6608B	FAA, POTOMAC TRACON	Quantico Range Complex	010000AMSL	SURFACE	USMC
R6608C	FAA, POTOMAC TRACON	Quantico Range Complex	010000AMSL	SURFACE	USMC
R6609	FAA, WASHINGTON, DC ARTCC	Patuxent River Complex	FL200	SURFACE	USN
R6611A	FAA, WASHINGTON, DC ARTCC	NSWC Dahlgren	FL400	SURFACE	USN
R6611B	FAA, WASHINGTON, DC ARTCC	NSWC Dahlgren	FL600	FL400	USN
R6612	FAA, WASHINGTON, DC ARTCC	NSWC Dahlgren	007000AMSL	SURFACE	USN
R6613A	FAA, WASHINGTON, DC ARTCC	NSWC Dahlgren	FL400	SURFACE	USN
R6613B	FAA, WASHINGTON, DC ARTCC	NSWC Dahlgren	FL600	FL400	USN
R6701	USN, WHIDBEY ISLAND NAS APP	Whidbey Island Range Complex	005000AMSL	SURFACE	USN
R6703A	FAA, SEATTLE-TACOMA APP	Whidbey Island Range Complex	014000AMSL	SURFACE	USN
R6703B	FAA, SEATTLE-TACOMA APP	Whidbey Island Range Complex	005000AMSL	SURFACE	USN
R6703C	FAA, SEATTLE-TACOMA APP	Whidbey Island Range Complex	014000AMSL	SURFACE	USN
R6703D	FAA, SEATTLE-TACOMA APP	Whidbey Island Range Complex	005000AMSL	SURFACE	USN
R6703E	FAA, SEATTLE-TACOMA APP	Whidbey Island Range Complex	014000AMSL	SURFACE	USN
R6703F	FAA, SEATTLE-TACOMA APP	Whidbey Island Range Complex	005000AMSL	SURFACE	USN
R6703G	FAA, SEATTLE-TACOMA APP	Whidbey Island Range Complex	005000AMSL	SURFACE	USN
R6703H	FAA, SEATTLE-TACOMA APP	Whidbey Island Range Complex	005000AMSL	SURFACE	USN
R6703I	FAA, SEATTLE-TACOMA APP	Whidbey Island Range Complex	005000AMSL	SURFACE	USN
R6703J	FAA, SEATTLE-TACOMA APP	Whidbey Island Range Complex	005000AMSL	SURFACE	USN
R6714A	FAA, SEATTLE ARTCC	Fort Lewis	028999AMSL	SURFACE	USA
R6714B	FAA, SEATTLE ARTCC	Fort Lewis	028999AMSL	SURFACE	USA
R6714C	FAA, SEATTLE ARTCC	Fort Lewis	028999AMSL	SURFACE	USA
R6714D	FAA, SEATTLE ARTCC	Fort Lewis	028999AMSL	SURFACE	USA
R6714E	FAA, SEATTLE ARTCC	Yakima	054999AMSL	29000AMSL	USA

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R6714F	FAA, SEATTLE ARTCC	Fort Lewis	028999AMSL	SURFACE	USA
R6714G	FAA, SEATTLE ARTCC	Fort Lewis	028999AMSL	SURFACE	USA
R6714H	FAA, SEATTLE ARTCC	Fort Lewis	005499AMSL	SURFACE	USA
R6901A	FAA, MINNEAPOLIS ARTCC	Fort McCoy	FL200	SURFACE	USA
R6901B	FAA, MINNEAPOLIS ARTCC	Fort McCoy	FL200	SURFACE	USA
R6903	FAA, CHICAGO ARTCC	Volk Field ANGB	FL450	SURFACE	USAF(ANG)
R6904A	FAA, MINNEAPOLIS ARTCC	Volk Field ANGB	FL230	00150AGL	USAF(ANG)
R6904B	FAA, MINNEAPOLIS ARTCC	Volk Field ANGB	FL230	SURFACE	USAF(ANG)
R7001A	FAA, DENVER ARTCC	Camp Guernsey	007999AMSL	SURFACE	USA
R7001B	FAA, DENVER ARTCC	Camp Guernsey	023500AMSL	08000AMSL	USA
R7001C	FAA, DENVER ARTCC	Camp Guernsey	FL300	23500AMSL	USA
R7201	FAA, GUAM CENTER/RAPCON	Marianas Range Complex	FL600	SURFACE	USN
RACER A MOA, IN	HQ IN ANG Det 1	Camp Atterbury	004000AMSL	00500AGL	USA(ARNG)
RACER B MOA, IN	HQ IN ANG, Det 1, CAMP ATTERBURY, IN	Camp Atterbury	008000AMSL	04000AMSL	USA(ARNG)
RACER C MOA, IN	HQ IN ANG, Det 1, CAMP ATTERBURY, IN	Camp Atterbury	017999AMSL	014000AMSL	USA(ARNG)
RAINIER 1 MOA, WA	FAA, SEATTLE-TACOMA APP CON	Fort Lewis	009000AMSL	02000AMSL	USA
RAINIER 2 MOA, WA	FAA, SEATTLE-TACOMA APP CON	Fort Lewis	009000AMSL	02000AMSL	USA
RAINIER 3 MOA, WA	FAA, SEATTLE-TACOMA APP CON	Fort Lewis	009000AMSL	02000AMSL	USA
RANCH HIGH MOA, NV	FAA, OAKLAND ARTCC	Fallon Range Complex	013000AMSL	09000AMSL	USN
RANCH MOA, NV	FAA, OAKLAND ARTCC	Fallon Range Complex	009000AMSL	00500AMSL	USN
RANDOLPH 1A MOA, TX	FAA, HOUSTON ARTCC	Randolph AFB	018000AMSL	08000AMSL	USAF
RANDOLPH 1B MOA, TX	FAA, SAN ANTONIO TRACON	Randolph AFB	018000AMSL	07000AMSL	USAF
RANDOLPH 2A MOA, TX	FAA, HOUSTON ARTCC	Randolph AFB	018000AMSL	09000AMSL	USAF
RANDOLPH 2B MOA, TX	FAA, HOUSTON ARTCC	Randolph AFB	018000AMSL	14000AMSL	USAF
RED HILLS MOA, IN	FAA, INDIANAPOLIS ARTCC	181 TFG, IN ANG, Terre Haute	018000AMSL	06000AMSL	USAF(ANG)
RENO MOA, NV	FAA, OAKLAND ARTCC	Fallon Range Complex	018000AMSL	13000AMSL	USN
RESERVE MOA, AZ	FAA, ALBUQUERQUE ARTCC	162 FW, AZ ANG	018000AMSL	05000AGL	USAF(ANG)
REVEILLE NORTH MOA, NV	FAA, SALT LAKE CITY ARTCC	Nellis AFB	018000AMSL	00100AGL	USAF
REVEILLE SOUTH MOA, NV	FAA, SALT LAKE CITY ARTCC	Nellis AFB	018000AMSL	00100AGL	USAF
RILEY MOA, KS	CO, 24 Infantry Div	Fort Riley	FL180	07000AMSL	USA
ROBERTS MOA, CA	FAA, OAKLAND ARTCC	Whidbey Island Range Complex	014999AMSL	00500AGL	USN
ROOSEVELT A MOA, WA	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	018000AMSL	09000AMSL	USN
ROOSEVELT B MOA, WA	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	008999AMSL	00300AGL	USN
ROOSEVELT B MOA, WA (XA)	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	008999AMSL	01501AGL	USN

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ROSE HILL MOA, AL	FAA, JACKSONVILLE ARTCC	Eglin AFB	017999AMSL	08000AMSL	USAF
RUBY 1 MOA, AZ	FAA, ALBUQUERQUE ARTCC	162 FW, AZ ANG	018000AMSL	10000AMSL	USAF(ANG)
SALEM MOA, MO	FAA, KANSAS CITY ARTCC	131 TFW, Det 1, MO ANG	006999AMSL	SURFACE	USAF(ANG)
SALEM MOA, MO (XA)	FAA, KANSAS CITY ARTCC	131 TFW, Det 1, MO ANG	006999AMSL	01501AGL	USAF(ANG)
SALEM MOA, MO (XB)	FAA, KANSAS CITY ARTCC	131 TFW, Det 1, MO ANG	006999AMSL	01501AGL	USAF(ANG)
SALINE MOA, CA	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	018000AMSL	00200AGL	USAF
SALINE MOA, CA (XA)	FAA, HI-DESERT TRACON, EDWARDS AFB	Edwards AFB	018000AMSL	03001AMSL	USAF
SELLS 1 MOA, AZ	FAA, ALBUQUERQUE ARTCC	Luke AFB	018000AMSL	10000AMSL	USAF
SELLS LOW MOA, AZ	FAA, ALBUQUERQUE ARTCC	Luke AFB	009999AMSL	03000AGL	USAF
SEVIER A MOA, UT	FAA, SALT LAKE CITY ARTCC	Hill AFB	014500AMSL	00100AGL	USAF
SEVIER B MOA, UT	FAA, SALT LAKE CITY ARTCC	Hill AFB	009500AMSL	00100AGL	USAF
SEVIER C MOA, NV	FAA, SALT LAKE CITY ARTCC	Hill AFB	018000AMSL	14500AMSL	USAF
SEVIER D MOA, UT	FAA, SALT LAKE CITY ARTCC	Hill AFB	018000AMSL	09500AMSL	USAF
SEYMOUR JOHNSON ECHO MOA, NC	FAA, WASHINGTON, DC ARTCC	Seymour-Johnson AFB	018000AMSL	07000AMSL	USAF
SHEPPARD 1 MOA, TX	FAA, FORT WORTH ARTCC	Sheppard AFB	018000AMSL	08000AMSL	USAF
SHEPPARD 2 MOA, TX	FAA, FORT WORTH ARTCC	Sheppard AFB	018000AMSL	08000AMSL	USAF
SHIRLEY A MOA, AR	FAA, MEMPHIS ARTCC	Fort Smith	018000AMSL	11000AMSL	USAF
SHIRLEY B MOA, AR	FAA, MEMPHIS ARTCC	Fort Smith	018000AMSL	11000AMSL	USAF
SHIRLEY C MOA, AR	FAA, MEMPHIS ARTCC	Fort Smith	018000AMSL	11000AMSL	USAF
SHOSHONE MOA, CA	FAA, LOS ANGELES ARTCC	R-2508 Complex	018000AMSL	03001AGL	USAF
SHOSHONE MOA, CA (XA)	FAA, LOS ANGELES ARTCC	R-2508 Complex	003000AGL	00200AGL	USAF
SHOSHONE MOA, CA (XB)	FAA, LOS ANGELES ARTCC	R-2508 Complex	018000AMSL	01501AGL	USAF
SILVER MOA NORTH, CA	FAA, LOS ANGELES ARTCC	Fort Irwin	009000AMSL	00200AGL	USA
SILVER MOA NORTH, CA (XA)	FAA, LOS ANGELES ARTCC	Fort Irwin	003000AGL	SURFACE	USA
SILVER MOA SOUTH, CA	FAA, LOS ANGELES ARTCC	Fort Irwin	007000AMSL	00200AGL	USA
SNOOPY EAST MOA, MN	FAA, MINNEAPOLIS ARTCC	148 FIG, MN ANG	018000AMSL	00300AGL	USAF(ANG)
SNOOPY EAST MOA, MN (XA)	FAA, MINNEAPOLIS ARTCC	148 FIG, MN ANG	018000AMSL	06001AMSL	USAF(ANG)
SNOOPY WEST MOA, MN	FAA, MINNEAPOLIS ARTCC	148 FIG, MN ANG	018000AMSL	06000AMSL	USAF(ANG)
STONY A MOA, AK	FAA, ANCHORAGE ARTCC	Elmendorf AFB	018000AMSL	00100AGL	USAF
STONY A MOA, AK (XA)	FAA, ANCHORAGE ARTCC	Elmendorf AFB	018000AMSL	01501AGL	USAF
STONY B MOA, AK	FAA, ANCHORAGE ARTCC	Elmendorf AFB	018000AMSL	02000AGL	USAF
STONY B MOA, AK (XA)	FAA, ANCHORAGE ARTCC	Elmendorf AFB	018000AMSL	01501AGL	USAF
STONY B MOA, AK (XB)	FAA, ANCHORAGE ARTCC	Elmendorf AFB	018000AMSL	01501AGL	USAF
STONY B MOA, AK (XC)	FAA, ANCHORAGE ARTCC	Elmendorf AFB	018000AMSL	01501AGL	USAF

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STONY B MOA, AK (XD)	FAA, ANCHORAGE ARTCC	Elmendorf AFB	018000AMSL	01501AGL	USAF
STUMPY POINT MOA, NC	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	007999AMSL	SURFACE	USN
SUNDANCE MOA, CA	FAA, LOS ANGELES ARTCC	Twentynine Palms Range Complex	010000AMSL	00500AGL	USMC
SUNDANCE MOA, CA (XA)	FAA, LOS ANGELES ARTCC	Twentynine Palms Range Complex	010000AMSL	01501AGL	USMC
SUNNY MOA, AZ	FAA, DENVER ARTCC	Luke AFB	018000AMSL	12000AMSL	USAF
SUSITNA MOA, AK	FAA, ANCHORAGE ARTCC	Elmendorf AFB	018000AMSL	10000AMSL	USAF
TAIBAN MOA, NM	FAA, ALBUQUERQUE ARTCC	Cannon AFB	010999AMSL	00500AGL	USAF
TALON EAST HIGH MOA, NM	FAA, ALBUQUERQUE ARTCC	Holloman AFB	018000AMSL	12500AMSL	USAF
TALON LOW MOA, NM	FAA, ALBUQUERQUE ARTCC	Holloman AFB	018000AMSL	12500AMSL	USAF
TALON WEST HIGH MOA, NM	FAA, ALBUQUERQUE ARTCC	Holloman AFB	012499AMSL	00300AGL	USAF
TEXON MOA, TX	FAA, HOUSTON ARTCC	Randolph AFB	018000AMSL	06000AMSL	USAF
TIGER NORTH MOA, ND	FAA, MINNEAPOLIS ARTCC	McChord AFB	018000AMSL	00300AGL	USAF
TIGER NORTH MOA, ND (XA)	FAA, MINNEAPOLIS ARTCC	McChord AFB	018000AMSL	03001AGL	USAF
TIGER NORTH MOA, ND (XB)	FAA, MINNEAPOLIS ARTCC	McChord AFB	018000AMSL	01501AGL	USAF
TIGER NORTH MOA, ND (XC)	FAA, MINNEAPOLIS ARTCC	McChord AFB	018000AMSL	01501AGL	USAF
TIGER NORTH MOA, ND (XD)	FAA, MINNEAPOLIS ARTCC	McChord AFB	018000AMSL	01501AGL	USAF
TIGER SOUTH MOA, ND	FAA, MINNEAPOLIS ARTCC	McChord AFB	018000AMSL	06000AMSL	USAF
TOMBSTONE A MOA, AZ	FAA, ALBUQUERQUE ARTCC	David-Monthan AFB	014499AMSL	00500AGL	USAF
TOMBSTONE B MOA, AZ	FAA, ALBUQUERQUE ARTCC	David-Monthan AFB	014499AMSL	00500AGL	USAF
TOMBSTONE C MOA, AZ	FAA, ALBUQUERQUE ARTCC	David-Monthan AFB	018000AMSL	14500AMSL	USAF
TORTUGAS MOA, FL	FAA, MIAMI ARTCC	Key West Range Complex	017999AMSL	05000AMSL	USN
TRUMAN A MOA, MO	FAA, KANSAS CITY ARTCC	Whiteman AFB	018000AMSL	08000AMSL	USAF
TRUMAN B MOA, MO	FAA, KANSAS CITY ARTCC	Whiteman AFB	018000AMSL	08000AMSL	USAF
TRUMAN C MOA, MO	FAA, KANSAS CITY ARTCC	Whiteman AFB	018000AMSL	00500AGL	USAF
TURTLE MOA, AZ	FAA, LOS ANGELES ARTCC	Yuma Range Complex	017999MSL	11000AMSL	USMC
TWO BUTTES HIGH MOA, CO	FAA, DENVER ARTCC	Buckley ANGB	018000AMSL	10000AMSL	USAF(ANG)
TWO BUTTES LOW MOA, CO	FAA, DENVER ARTCC	Buckley ANGB	009999AMSL	00300AGL	USAF(ANG)
TYNDALL B MOA, FL	USAF, TYNDALL RADAR APP CON	Tyndall AFB	018000AMSL	09000AMSL	USAF
TYNDALL C MOA, FL	USAF, TYNDALL RADAR APP CON	Tyndall AFB	006000AMSL	00300AGL	USAF
TYNDALL D MOA, FL	USAF, TYNDALL RADAR APP CON	Tyndall AFB	006000AMSL	00300AGL	USAF
TYNDALL E MOA, FL	USAF, TYNDALL RADAR APP CON	Tyndall AFB	018000AMSL	00300AGL	USAF
TYNDALL E MOA, FL (XA)	USAF, TYNDALL RADAR APP CON	Tyndall AFB	018000AMSL	01501AGL	USAF
TYNDALL E MOA, FL (XB)	USAF, TYNDALL RADAR APP CON	Tyndall AFB	018000AMSL	01501AGL	USAF
TYNDALL F MOA, FL	USAF, TYNDALL RADAR APP CON	Tyndall AFB	018000AMSL	00300AGL	USAF

2015 SUA Name	Controlling Agency	Range Complex/ Installation Name	Upper Altitude	Lower Altitude	Military Service
TYNDALL F MOA, FL (XA)	USAF, TYNDALL RADAR APP CON	Tyndall AFB	018000AMSL	01501AGL	USAF
TYNDALL F MOA, FL (XB)	USAF, TYNDALL RADAR APP CON	Tyndall AFB	018000AMSL	01501AGL	USAF
TYNDALL G MOA, FL	USAF, TYNDALL RADAR APP CON	Tyndall AFB	018000AMSL	01000AGL	USAF
TYNDALL G MOA, FL (XA)	USAF, TYNDALL RADAR APP CON	Tyndall AFB	018000AMSL	01501AGL	USAF
TYNDALL G MOA, FL (XB)	USAF, TYNDALL RADAR APP CON	Tyndall AFB	018000AMSL	01501AGL	USAF
TYNDALL H MOA, FL	USAF, TYNDALL RADAR APP CON	Tyndall AFB	018000AMSL	09000AMSL	USAF
VALENTINE MOA, TX	FAA, ALBUQUERQUE ARTCC	Holloman AFB	018000AMSL	15000AMSL	USAF
VANCE 1A MOA, OK	FAA, KANSAS CITY ARTCC	Vance AFB	018000AMSL	10000AMSL	USAF
VANCE 1B MOA, OK	FAA, KANSAS CITY ARTCC	Vance AFB	018000AMSL	07000AMSL	USAF
VANCE 1C MOA, OK	FAA, KANSAS CITY ARTCC	Vance AFB	018000AMSL	08000AMSL	USAF
VANCE 1D MOA, OK	FAA, KANSAS CITY ARTCC	Vance AFB	018000AMSL	08000AMSL	USAF
VIPER A MOA, AK	FAA, FAIRBANKS TWR	Eielson AFB	010000AMSL	00500AGL	USAF
VIPER A MOA, AK (XA)	FAA, FAIRBANKS TWR	Eielson AFB	010000AMSL	05001AMSL	USAF
VIPER A MOA, AK (XB)	FAA, FAIRBANKS TWR	Eielson AFB	010000AMSL	03001AMSL	USAF
VIPER B MOA, AK	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMSL	10000AMSL	USAF
VOLK EAST MOA, WI	FAA, CHICAGO ARTCC	Volk Field ANGB	018000AMSL	08000AMSL	USAF(ANG)
VOLK SOUTH MOA, WI	FAA, CHICAGO ARTCC	Hardwood (Volk Field)	018000AMSL	00500AGL	USAF(ANG)
VOLK SOUTH MOA, WI (XA)	FAA, CHICAGO ARTCC	Hardwood (Volk Field)	018000AMSL	01501AGL	USAF(ANG)
VOLK SOUTH MOA, WI (XB)	FAA, CHICAGO ARTCC	Hardwood (Volk Field)	018000AMSL	01501AGL	USAF(ANG)
VOLK SOUTH MOA, WI (XC)	FAA, CHICAGO ARTCC	Hardwood (Volk Field)	018000AMSL	01501AGL	USAF(ANG)
VOLK WEST MOA, WI	FAA, MINNEAPOLIS ARTCC	Volk Field ANGB	018000AMSL	00100AGL	USAF(ANG)
W1001	CDR, NS Guantanamo Bay	Guantanamo Complex	045000AMSL	SURFACE	USN
W102H	FAA, BOSTON ARTCC	Boston Range Complex	FL600	17001AMSL	USAF
W102L	FAA, BOSTON ARTCC	Boston Range Complex	017000AMSL	SURFACE	USAF
W103	FAA, BOSTON ARTCC	Boston Range Complex	002000AMSL	SURFACE	USAF
W104A	FAA, BOSTON ARTCC	Boston Range Complex	010000AMSL	SURFACE	USAF
W104B	FAA, BOSTON ARTCC	Boston Range Complex	018000AMSL	SURFACE	USAF
W104C	FAA, BOSTON ARTCC	Boston Range Complex	UNLTD	FL180	USAF
W105A	FAA, BOSTON ARTCC	Narragansett Range Complex	FL500	SURFACE	USN
W105B	FAA, BOSTON ARTCC	Narragansett Range Complex	FL180	SURFACE	USN
W106A	FAA, BOSTON ARTCC	Narragansett Range Complex	003000AMSL	SURFACE	USN
W106B	FAA, BOSTON ARTCC	Narragansett Range Complex	008000AMSL	SURFACE	USN
W106C	FAA, BOSTON ARTCC	Narragansett Range Complex	010000AMSL	SURFACE	USN
W106D	FACSFAC, VACAPES, OCEANA NAS	Narragansett Range Complex	005999AMSL	SURFACE	USN

2015 SUA Name	Controlling Agency	Range Complex/ Installation Name	Upper Altitude	Lower Altitude	Military Service
W107A	FAA, WASHINGTON, DC ARTCC	Atlantic City Range Complex	UNLTD	SURFACE	USN
W107B	FAA, WASHINGTON, DC ARTCC	Atlantic City Range Complex	001999AMSL	SURFACE	USN
W107C	FAA, WASHINGTON, DC ARTCC	Atlantic City Range Complex	017999AMSL	SURFACE	USN
W110	USN, FACSFAC, VACAPES	VACAPES Range Complex	FL230	SURFACE	USN
W122(1)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W122(10)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W122(11)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W122(12)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W122(13)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W122(14)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W122(15A)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W122(15B)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W122(16)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W122(17)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W122(18)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W122(19)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W122(2)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W122(20)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W122(21)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W122(22)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W122(23)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W122(3)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W122(4)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W122(5)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W122(6)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W122(7)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W122(8)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W122(9)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W132A	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	UNLTD	SURFACE	USN
W132B	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	FL240	SURFACE	USN
W133	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	004500AMSL	SURFACE	USN
W134	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	UNLTD	04500AMSL	USN
W147A	FAA, HOUSTON ARTCC	Ellington Field	022999AMSL	05000AMSL	USAF
W147B	FAA, HOUSTON ARTCC	Ellington Field	FL500	FL230	USAF

2015 SUA Name	Controlling Agency	Range Complex/ Installation Name	Upper Altitude	Lower Altitude	Military Service
W147C	FAA, HOUSTON ARTCC	Ellington Field	FL500	SURFACE	USAF
W147D	FAA, HOUSTON ARTCC	Ellington Field	FL500	SURFACE	USAF
W147E	FAA, HOUSTON ARTCC	Ellington Field	FL500	FL260	USAF
W151A	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF
W151B	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF
W151C	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF
W151D	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF
W151E	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF
W151F	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF
W155A	FAA, JACKSONVILLE ARTCC	GOMEX Range Complex	FL600	SURFACE	USN
W155B	FAA, JACKSONVILLE ARTCC	GOMEX Range Complex	FL600	SURFACE	USN
W155C	FAA, JACKSONVILLE ARTCC	GOMEX Range Complex	FL600	SURFACE	USN
W157A	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	FL430	SURFACE	USN
W157B	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	FL240	SURFACE	USN
W157C	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	005000AMSL	SURFACE	USN
W158A	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	FL430	SURFACE	USN
W158B	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	FL240	SURFACE	USN
W158C	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	UNLTD	FL430	USN
W158E	FAA, JACKSONVILLE NAS TRACON	Jacksonville Range Complex	001200AMSL	SURFACE	USN
W158F	FAA, JACKSONVILLE NAS TRACON	Jacksonville Range Complex	001700AMSL	01200AMSL	USN
W159A	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	FL430	SURFACE	USN
W159B	FAA, JACKSONVILLE ARTCC	Jacksonville Range Complex	FL240	SURFACE	USN
W161A	FAA, JACKSONVILLE ARTCC	Shaw AFB	FL620	SURFACE	USAF
W161B	FAA, JACKSONVILLE ARTCC	Shaw AFB	FL240	SURFACE	USAF
W168	FAA, MIAMI ARTCC	MacDill AFB	UNLTD	SURFACE	USAF
W174A	FAA, MIAMI ARTCC	Key West Range Complex	FL700	SURFACE	USN
W174B(A)	FAA, MIAMI ARTCC	Key West Range Complex	FL700	SURFACE	USN
W174B(B)	FAA, MIAMI ARTCC	Key West Range Complex	005500AMSL	SURFACE	USN
W174C(A)	FAA, MIAMI ARTCC	Key West Range Complex	FL700	SURFACE	USN
W174C(B)	FAA, MIAMI ARTCC	Key West Range Complex	005500AMSL	SURFACE	USN
W174D	FAA, MIAMI ARTCC	Key West Range Complex	FL700	SURFACE	USN
W174D(A)	FAA, MIAMI ARTCC	Key West Range Complex	FL700	05500AMSL	USN
W174E	FAA, MIAMI ARTCC	Key West Range Complex	010000AMSL	SURFACE	USN
W174F	FAA, MIAMI ARTCC	Key West Range Complex	FL700	SURFACE	USN

2015 SUA Name	Controlling Agency	Range Complex/ Installation Name	Upper Altitude	Lower Altitude	Military Service
W174G	FAA, MIAMI ARTCC	Key West Range Complex	FL700	SURFACE	USN
W177A(A)	FAA, JACKSONVILLE ARTCC	Shaw AFB	FL500	SURFACE	USAF
W177A(B)	FAA, JACKSONVILLE ARTCC	Shaw AFB	FL500	06001AMSL	USAF
W177B	FAA, JACKSONVILLE ARTCC	Shaw AFB	FL240	SURFACE	USAF
W186	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	009000AMSL	SURFACE	USN
W187	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	FL180	SURFACE	USN
W188(A)	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	UNLTD	SURFACE	USN
W188(B)	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	UNLTD	SURFACE	USN
W189	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	UNLTD	SURFACE	USN
W190	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	UNLTD	SURFACE	USN
W191	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	003000AMSL	SURFACE	USN
W192	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	UNLTD	SURFACE	USN
W193	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	UNLTD	SURFACE	USN
W194	FAA, HONOLULU CERAP	Hawaiian Islands Range Complex	UNLTD	SURFACE	USN
W196	FAA, HONOLULU TWR	Hawaiian Islands Range Complex	002000AMSL	SURFACE	USN
W228A	FAA, HOUSTON ARTCC	GOMEX Range Complex	FL450	SURFACE	USN
W228B	FAA, HOUSTON ARTCC	GOMEX Range Complex	FL450	SURFACE	USN
W228C	FAA, HOUSTON ARTCC	GOMEX Range Complex	FL450	SURFACE	USN
W228D	FAA, HOUSTON ARTCC	GOMEX Range Complex	FL450	SURFACE	USN
W237A(HI)	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	FL500	FL230	USN
W237A(LO)	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	FL230	SURFACE	USN
W237B(HI)	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	FL500	FL230	USN
W237B(LO)	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	FL230	SURFACE	USN
W237C	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	UNLTD	SURFACE	USN
W237D	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	UNLTD	SURFACE	USN
W237E	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	FL270	SURFACE	USN
W237F	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	UNLTD	SURFACE	USN
W237G	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	UNLTD	SURFACE	USN
W237H	FAA, OAKLAND ARTCC	Whidbey Island Range Complex	FL270	SURFACE	USN
W237J	FAA, OAKLAND ARTCC	Whidbey Island Range Complex	FL270	SURFACE	USN
W260	FAA, OAKLAND ARTCC	Northern California Range Complex	FL600	SURFACE	USN
W283	FAA, OAKLAND ARTCC	Northern California Range Complex	FL600	SURFACE	USN
W285A	FAA, OAKLAND ARTCC	Northern California Range Complex	FL450	SURFACE	USN

2015 SUA Name	Controlling Agency	Range Complex/ Installation Name	Upper Altitude	Lower Altitude	Military Service
W285B	FAA, OAKLAND ARTCC	Northern California Range Complex	FL450	08000AMSL	USN
W289E	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	UNLTD	SURFACE	USN
W289N	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	FL240	SURFACE	USN
W289S	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	UNLTD	SURFACE	USN
W289W	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	UNLTD	SURFACE	USN
W291	FAA, LOS ANGELES ARTCC	SOCAL Range Complex	FL800	SURFACE	USN
W292E	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	UNLTD	SURFACE	USN
W292W	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	UNLTD	SURFACE	USN
W386	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W386(A)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	FL230	SURFACE	USN
W387A	USN, FACSFAC VACAPES	VACAPES Range Complex	023999AMSL	SURFACE	USN
W387B	USN, FACSFAC VACAPES	VACAPES Range Complex	UNLTD	FL240	USN
W412	FAA, LOS AGELES ARTCC	Pt. Mugu Range Complex	003000AMSL	SURFACE	USN
W453	FAA, HOUSTON ARTCC	ANG CRTC GULFPORT, Gulfport, MS	FL500	SURFACE	USAF(ANG)
W453(A)	FAA, HOUSTON ARTCC	ANG CRTC GULFPORT, Gulfport, MS	006000AMSL	SURFACE	USAF(ANG)
W453(B)	FAA, HOUSTON ARTCC	ANG CRTC GULFPORT, Gulfport, MS	FL600	06000AMSL	USAF(ANG)
W465A	FAA, MIAMI ARTCC	Key West Range Complex	FL700	SURFACE	USN
W465B	FAA, MIAMI ARTCC	Key West Range Complex	FL700	SURFACE	USN
W465C	FAA, MIAMI ARTCC	Key West Range Complex	FL700	FL210	USN
W470A	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF
W470B	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF
W470C	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF
W470D	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF
W470E	FAA, MIAMI ARTCC	Eglin AFB	UNLTD	SURFACE	USAF
W470F	FAA, JACKSONVILLE ARTCC	Eglin AFB	UNLTD	SURFACE	USAF
W497A	FAA, MIAMI ARTCC	Patrick AFB	UNLTD	SURFACE	USAF
W497B	FAA, MIAMI ARTCC	Patrick AFB	UNLTD	SURFACE	USAF
W506	FAA, NEW YORK ARTCC	NE ADS/DOOS, NY ANG	FL500	SURFACE	USAF
W50A	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	FL750	SURFACE	USN
W50B	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	FL750	SURFACE	USN
W50C	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	FL750	SURFACE	USN
W513	FAA, OAKLAND ARTCC	San Francisco Range Complex	FL600	SURFACE	USN
W517	FAA, GUAM CERAP	Marianas Range Complex	UNLTD	SURFACE	USN

2015 SUA Name	Controlling Agency	Range Complex/ Installation Name	Upper Altitude	Lower Altitude	Military Service
W532E	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	UNLTD	SURFACE	USN
W532N	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	UNLTD	SURFACE	USN
W532S	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	UNLTD	SURFACE	USN
W537	FAA, LOS ANGELES ARTCC	Pt. Mugu Range Complex	UNLTD	SURFACE	USN
W54A	FAA, HOUSTON ARTCC	New Orleans NAS JRB	FL400	SURFACE	USN
W54B	FAA, HOUSTON ARTCC	New Orleans NAS JRB	FL240	SURFACE	USN
W54C	FAA, HOUSTON ARTCC	New Orleans NAS JRB	FL400	FL240	USN
W570	FAA, SEATTLE ARTCC	Whidbey Island Range Complex	FL500	SURFACE	USN
W59A	FAA, HOUSTON ARTCC	New Orleans NAS JRB	FL500	05000AMSL	USN
W59B	FAA, HOUSTON ARTCC	New Orleans NAS JRB	027999AMSL	05000AMSL	USN
W59C	FAA, HOUSTON ARTCC	New Orleans NAS JRB	FL500	FL280	USN
W602	FAA, HOUSTON ARTCC	GOMEX Range Complex	FL250	SURFACE	USN
W612	FAA, ANCHORAGE ARTCC	Elmendorf AFB	FL290	SURFACE	USAF
W72(13)A	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	001999AMSL	SURFACE	USN
W72(13)B	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	FL600	USN
W72(1A)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W72(1B)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W72(1C)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W72(1D)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W72(1E)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W72(1F)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W72(20)A	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	001999AMSL	SURFACE	USN
W72(20)B	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	FL600	USN
W72(2A)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W72(2B)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W72(2C)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W72(2D)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W72(2E)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W72(2F)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W72(3A)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W72(3B)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W72(3C)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W72(3D)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN

2015 SUA Name	Controlling Agency	Range Complex/ Installation Name	Upper Altitude	Lower Altitude	Military Service
W72(3E)	FAA, WASHINGTON, DC ARTCC	VACAPES Range Complex	UNLTD	SURFACE	USN
W74(A)	FAA, JACKSONVILLE ARTCC	MCAS Beaufort/Townsend Range Complex	010000AMSL	SURFACE	USMC
W74(B)	FAA, JACKSONVILLE ARTCC	MCAS Beaufort/Townsend Range Complex	010000AMSL	03000AMSL	USMC
W92	FAA, HOUSTON ARTCC	GOMEX Range Complex	FL400	SURFACE	USN
W93(A)	FAA, SEATTLE ARTCC	McChord AFB	FL500	SURFACE	USAF
W93(B)	FAA, SEATTLE ARTCC	McChord AFB	FL500	SURFACE	USAF
WARRIOR 1 HIGH MOA, LA	FAA, HOUSTON ARTCC	Fort Polk	018000AMSL	10000AMSL	USA
WARRIOR 1 LOW MOA, LA	FAA, HOUSTON ARTCC	Fort Polk	009999AMSL	00100AGL	USA
WARRIOR 1 LOW MOA, LA (XA)	FAA, HOUSTON ARTCC	Fort Polk	009999AMSL	01501AGL	USA
WARRIOR 1 LOW MOA, LA (XB)	FAA, HOUSTON ARTCC	Fort Polk	009999AMSL	01501AGL	USA
WARRIOR 2 HIGH MOA, LA	FAA, HOUSTON ARTCC	Fort Polk	018000AMSL	10000AMSL	USA
WARRIOR 2 LOW MOA, LA	FAA, HOUSTON ARTCC	Fort Polk	009999AMSL	00100AGL	USA
WARRIOR 2 LOW MOA, LA (XA)	FAA, HOUSTON ARTCC	Fort Polk	009999AMSL	01501AGL	USA
WARRIOR 2 LOW MOA, LA (XB)	FAA, HOUSTON ARTCC	Fort Polk	009999AMSL	01501AGL	USA
WARRIOR 2 LOW MOA, LA (XC)	FAA, HOUSTON ARTCC	Fort Polk	009999AMSL	01501AGL	USA
WARRIOR 3 HIGH MOA, LA	FAA, HOUSTON ARTCC	Fort Polk	018000AMSL	10000AMSL	USA
WARRIOR 3 LOW MOA, LA	FAA, HOUSTON ARTCC	Fort Polk	009999AMSL	00100AGL	USA
WARRIOR 3 LOW MOA, LA (XA)	FAA, HOUSTON ARTCC	Fort Polk	009999AMSL	01501AGL	USA
WARRIOR 3 LOW MOA, LA (XB)	FAA, HOUSTON ARTCC	Fort Polk	009999AMSL	01501AGL	USA
WASHITA MOA, OK	FAA, FORT WORTH ARTCC	Sheppard AFB	018000AMSL	08000AMSL	USAF
WESTOVER 1 MOA, TX	FAA, FORT WORTH ARTCC	Sheppard AFB	018000AMSL	09000AMSL	USAF
WESTOVER 2 MOA, TX	FAA, FORT WORTH ARTCC	Sheppard AFB	018000AMSL	10000AMSL	USAF
WHITMORE 1 MOA, CA	FAA, OAKLAND ARTCC	Beale AFB	018000AMSL	11000AMSL	USAF
WHITMORE 2 MOA, CA	FAA, OAKLAND ARTCC	Beale AFB	018000AMSL	11000AMSL	USAF
WHITMORE 3 MOA, CA	FAA, OAKLAND ARTCC	Beale AFB	018000AMSL	11000AMSL	USAF
YANKEE 1 MOA, NH	FAA, BOSTON ARTCC	103 TFG/DOC, CT ANG	018000AMSL	09000AMSL	USAF(ANG)
YANKEE 2 MOA, NH	FAA, BOSTON ARTCC	103 TFG/DOC, CT ANG	008999AMSL	00100AGL	USAF(ANG)
YUKON 1 MOA, AK	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMSL	00100AGL	USAF
YUKON 1 MOA, AK (XA)	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMSL	02001AGL	USAF
YUKON 1 MOA, AK (XB)	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMSL	01501AGL	USAF
YUKON 1 MOA, AK (XC)	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMSL	02001AMSL	USAF
YUKON 2 MOA, AK	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMSL	00100AGL	USAF
YUKON 2 MOA, AK (XA)	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMSL	02001AGL	USAF

2015 SUA Name	Controlling Agency	Range Complex/ Installation Name	Upper Altitude	Lower Altitude	Military Service
YUKON 2 MOA, AK (XB)	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMSL	01501AGL	USAF
YUKON 2 MOA, AK (XCA)	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMSL	02001AGL	USAF
YUKON 2 MOA, AK (XCB)	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMSL	02001AGL	USAF
YUKON 2 MOA, AK (XD)	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMSL	01501AGL	USAF
YUKON 2 MOA, AK (XE)	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMSL	01501AGL	USAF
YUKON 3 HIGH MOA, AK	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMSL	10000AMSL	USAF
YUKON 3A LOW MOA, AK	FAA, ANCHORAGE ARTCC	Eielson AFB	009999AMSL	00100AGL	USAF
YUKON 3A LOW MOA, AK (XA)	FAA, ANCHORAGE ARTCC	Eielson AFB	009999AMSL	02001AGL	USAF
YUKON 3B MOA, AK	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMSL	02000AGL	USAF
YUKON 4 MOA, AK	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMSL	00100AGL	USAF
YUKON 4 MOA, AK (XA)	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMSL	02001AGL	USAF
YUKON 5 MOA, AK	FAA, ANCHORAGE ARTCC	Eielson AFB	018000AMSL	05000AGL	USAF

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Table A-3 Military Training Route (MTR) Inventory

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
IR002	20 OSS/OSOA, Shaw AFB, SC 29152-5000 DSN 965-1121/1122, C 803-895-1121/1122, Fax	20 OSS/OSOS, Shaw AFB, SC 29152 Duty hrs DSN 965-1118/1119, C803-895-1118/1119.	Continuous	125
IR012	4 OSS/OSOR, Seymour Johnson AFB, NC 27531-5004 DSN 722-2672, C919-722-2672.	4 OSS/OSOS, Seymour Johnson AFB, NC 27531-5004 DSN 722-1973, C919-722-1973. Non-	Continuous	144
IR015	347 OSS/OSKA, Moody AFB, GA 31699-1899 DSN 460-4131, C229-257-4131.	23 OSS/OSOS, Moody AFB, GA 31699-1899 Mon-Fri 0730-1630L exc holidays DSN 460-78	Continuous	164
IR016	347 OSS/OSKA, Moody AFB, GA 31699-1899 DSN 460-4131, C229-257-4131.	23 OSS/OSOS, Moody AFB, GA 31699-1899 DSN 460-7831/7839 C229-257-7831/7839.Mon-F	Continuous	167
IR017	187 FW, 5187 Selma Highway, Montgomery, AL 36108-4824 DSN 358-9255, C334-394-725	Same as Originating Activity	Continuous	201
IR018	FACSFAC JAX, NAS Jacksonville, FL 32212 DSN 942-2004/2005, C904-542-2004/2005.	Same as Originating Activity	0700-2400 local daily	401
IR019	FACSFAC JAX, NAS Jacksonville, FL 32212 DSN 942-2004/2005, C904-542-2004/2005.	Same as Originating Activity	0700-2400 local daily	454
IR020	FACSFAC JAX, NAS Jacksonville, FL 32212 DSN 942-2004/2005, C904-542-2004/2005, A	Same as Originating Activity	0700-2400 local daily	392
IR021	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ Mon-Fri, occasionally on weekends	451
IR022	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ weekdays, occasional weekends	322
IR023	Originating Activity: CO MCAS CHERRY POINT, ATTN DIROPS/RMD, Cherry Point, NC 28533 DSN 582-4025, C252-466-4025. Scheduling Activity: Central Scheduling Office, MCAS Cherry Point, NC 28533 DSN 582-4040/4041, C252-466-4040/4041.	Central Scheduling Division, MCAS Cherry Point, NC 28533 DSN 582-4040/4041, C252	Continuous	224
IR030	Commander Naval Air Warfare Center, Weapons Division, Code 52911GE, NAWS, Point	Same as Originating Activity	Daylight hours only, daily	260
IR031	Commander Naval Air Warfare Center, Weapons Division, Code 52911GE, NAWS, Point	Same as Originating Activity	Daylight hours only, daily	260
IR032	Commander Naval Air Warfare Center, Weapons Division, Code 52911GE, NAWS, Point	Commander Fleet Area Control and Surveillance Facility Jacksonville, Naval Air S	Daylight hours	167
IR033	Commander Naval Air Warfare Center, Weapons Division, Code 52911GE, NAWS, Point	Commander Fleet Area Control and Surveillance Facility Jacksonville, Naval Air S	Daylight hours	211
IR034	347 Rescue Wing, Detachment 1/RO, 8707 North Golf Course St., MacDill AFB, FL 33	347 Rescue Wing, Detachment 1/ROA, 8707 North Golf Course St., MacDill AFB, FL 3	0600-2400 local	150
IR035	437 AW/C-17 OSS/OSA Charleston AFB, SC 29404 DSN 673-7692, C843-963-7692.	20 OSS/OSOS, Shaw AFB, SC 29152-5000 Duty hours DSN 965-1118/1119 C803-895-1118,	0600-2200 local, daily	198
IR036	437 AW/C-17 OSS/OSOT Charleston AFB, SC 29404 DSN 673-5613, C803-566-5613.	20 OSS/OSOS, Shaw AFB, SC 29152-5000 Duty hours DSN 965-1118/1119 C803-895-1118,	0600-2200 local, daily	178
IR037	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	Mon-Fri 1200-0400Z++, occasional weekends	213

* Data fields are limited to 80 characters in the source database (National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File)); therefore, some data field entries are not complete. Please refer to DoD Flight Information Publications for complete originating and scheduling activity information.

** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
IR038	FACSFAC, NAS Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	Sunrise-Sunset, Mon-Fri, occasional weekends	398
IR040	FACSFAC, NAS Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	Mon-Fri 1200-0400Z++, occasional weekends	176
IR044	COMTRAWING ONE, NAS Meridian, MS 39309-0136 DSN 637-2347, C601-679-2347.	Same as Originating Activity	Sunrise-Sunset	161
IR046	347 Rescue Wing, Detachment 1/RO, 8707 North Golf Course St., MacDill AFB, FL 33	347 Rescue Wing, Detachment 1/ROA, 8707 North Golf Course St., MacDill AFB, FL 3	0700-2400 local, daily	171
IR047	347 Rescue Wing, Detachment 1/RO, 8707 North Golf Course St., MacDill AFB, FL 33	347 Rescue Wing, Detachment 1/ROA, 8707 North Golf Course St., MacDill AFB, FL 3	0700-2400 local, daily	67
IR048	347 Rescue Wing, Detachment 1/RO, 8707 North Golf Course St., MacDill AFB, FL 33	347 Rescue Wing, Detachment 1/ROA, 8707 North Golf Course St., MacDill AFB, FL 3	0700-2400 local, daily	31
IR049	347 Rescue Wing, Detachment 1/RO, 8707 North Golf Course St., MacDill AFB, FL 33	347 Rescue Wing, Detachment 1/ROA, 8707 North Golf Course St., MacDill AFB, FL 3	0700-2400 local, daily	87
IR050	347 Rescue Wing, Detachment 1/RO, 8707 North Golf Course St., MacDill AFB, FL 33	347 Rescue Wing, Detachment 1/ROA, 8707 North Golf Course St., MacDill AFB, FL 3	0700-2400 local, daily	109
IR051	347 Rescue Wing, Detachment 1/RO, 8707 North Golf Course St., MacDill AFB, FL 33	347 Rescue Wing, Detachment 1/ROA, 8707 North Golf Course St., MacDill AFB, FL 3	0700-2400 local, daily	196
IR053	347 Rescue Wing, Detachment 1/RO, 8707 North Golf Course St., MacDill AFB, FL 33	347 Rescue Wing, Detachment 1/ROA, 8707 North Golf Course St., MacDill AFB, FL 3	0600-2400 local, daily	136
IR055	347 WG, Detachment 1/RO, 8707 North Golf Course St., MacDill AFB, FL 33621-5205	347 WG, Detachment 1/ROA, 8707 North Golf Course St., MacDill AFB, FL 33621-5205	0600-2400 local, daily	138
IR056	347 WG, Detachment 1/RO, 8707 North Golf Course St., MacDill AFB, FL 33621-5205	347 WG, Detachment 1/ROA, 8707 North Golf Course St., MacDill AFB, FL 33621-5205	0600-2400 local	206
IR057	1 SOG/OGO, Hurlburt Field, FL 32544 DSN 579-7812/7813, C850-884-7812/7813.	Same as Originating Activity	Continuous	416
IR059	1 SOG/OGO, Hurlburt Field, FL 32544 DSN 579-7812/7813, C850-884-7812/7813.	Same as Originating Activity	Continuous	436
IR062	COMSTRKFIGHTWINGLANT, Oceana NAS, Virginia Beach, VA 23460 DSN 433-9141, C757-43	FACSFAC VACAPES, Oceana , NAS Virginia Beach, VA 23460 DSN 433-1228, C757-433-12	Continuous	507
IR066	14 OSS/OSOP, Columbus AFB, MS 39710 DSN 742-3011/1221, C662-434-3011/1221.	50 FTS, Columbus AFB, MS 39710 DSN 742-7734/7735, C662-434-7734/7735.	Sunrise-Sunset Mon-Fri	285
IR067	14 OSS/OSOP, Columbus AFB, MS 39710 DSN 742-3011/1221, C662-434-3011/1221.	48 FTS, Columbus AFB, MS 39710 DSN 742-7840/7847, C662-434-7840/7847.	Sunrise-Sunset Mon-Fri	312
IR068	14 OSS/OSOP, Columbus AFB, MS 39710 DSN 742-3011/1221, C662-434-3011/1221.	48 FTS, Columbus AFB, MS 39710 DSN 742-7840/7847, C662-434-7840/7847.	Sunrise-Sunset Mon-Fri	149
IR070	14 OSS/OSOP, Columbus AFB, MS 39710-5000 DSN 742-7560/7633, C662-434-7560/7633.	48 FTS, Columbus AFB, MS 39710 DSN 742-7840/7847, C662-434-7840/7847.	Sunrise-Sunset daily	260

* Data fields are limited to 80 characters in the source database (National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File)); therefore, some data field entries are not complete. Please refer to DoD Flight Information Publications for complete originating and scheduling activity information.

** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
IR077	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ Mon-Fri; occasional weekends	276
IR078	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ Mon-Fri; occasional weekends	276
IR079	FACSFA, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ Mon-Fri; occasional weekends	246
IR080	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ Mon-Fri; occasional weekends	267
IR081	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ Mon-Fri; occasional weekends	216
IR082	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ Mon-Fri; occasional weekends	270
IR083	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ Mon-Fri; occasional weekends	298
IR089	437 OSS/OSOT, Charleston AFB, SC 29404 DSN 673-5554, C843-963-5554.	437 OSS/OSOT, Charleston AFB, SC 29404 DSN 673-5552, C843-963-5552. Non duty hrs	0600-2400 local, daily, Jan, Mar, May, Jul, Sep and Nov only	177
IR090	437 OSS/OSOT, Charleston AFB, SC 29404 DSN 673-5554, C843-963-5554.	437 OSS/OSOT, Charleston AFB, SC 29404 DSN 673-5552, C843-963-5552. Non duty hrs	0600-2400 local, daily, Feb, Apr, Jun, Aug, Oct and Dec only	177
IR091	14 OSS/OSOP Columbus AFB, MS 39710 DSN 742-7560/7633 C662-434-7560/7633.	50 FTS Columbus AFB, MS 39710 DSN 742-7734/7735, C662-434-7734/7735.	Sunrise-Sunset Mon-Fri	179
IR102	49 OSS/OSTA, 700 Delaware Ave., Holloman AFB, NM 88330-8017 DSN 572-3244, C575-5	49 OSS/OSOS, 744 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3536, C575-5	Daylight hours by NOTAM	520
IR103	301 OG/SUA, NAS JRB Fort Worth, TX 76127 DSN 739-6903/6904/6905, C817-782-6903/6	Same as Originating Activity	0700-2200 local; OT by NOTAM	117
IR105	301 OG/SUA, NAS JRB, Ft. Worth, TX 76127 DSN 739-6903/6904/6905, C817-782-6903/6	Same as Originating Activity.	0700-2200 local; OT by NOTAM	212
IR107	27 SOSS/OSOA 511 N. Torch Blvd, Building 300, Cannon AFB, NM 88103 DSN 681-2521.	27 SOSS/OSOS 511 N. Torch Blvd, Building 300, Cannon AFB, NM 88103 DSN 681-2276,	Continuous	655
IR109	27 SOSS/OSOA 511 N. Torch Blvd, Building 300, Cannon AFB, NM 88103 DSN 681-2521.	27 SOSS/OSOS 511 N. Torch Blvd, Building 300, Cannon AFB, NM 88103 DSN 681-2276,	Continuous	747
IR111	27 SOSS/OSOA 511 N. Torch Blvd, Building 300, Cannon AFB, NM 88103 DSN 681-2521	27 SOSS/OSOS 511 N. Torch Blvd, Building 300, Cannon AFB, NM 88103 DSN 681-2276,	Continuous	661
IR112	27 SOSS/OSOA 511 N. Torch Blvd, Building 300, Cannon AFB, NM 88103 DSN 681-2521	27 SOSS/OSOS 511 N. Torch Blvd, Building 300, Cannon AFB, NM 88103 DSN 681-2276,	Continuous	640
IR113	27 SOSS/OSOA 511 N. Torch Blvd, Building 300, Cannon AFB, NM 88103 DSN 681-2521.	27 SOSS/OSOS 511 N. Torch Blvd, Building 300, Cannon AFB, NM 88103 DSN 681-2276,	Continuous	781
IR115	49 OSS/OSTA, 700 Delaware Ave., Holloman AFB, NM 88330-8017 DSN 572-3244, C575-5	49 OSS/OSOS, 744 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3536, C575-5	Daylight hours by NOTAM	62

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
IR116	49 OSS/OSTA, 700 Delaware Ave., Holloman AFB, NM 88330-8017 DSN 572-3244, C575-5	49 OSS/OSOS, 744 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3536, C575-5	Daylight hours by NOTAM	62
IR117	188FW Arkansas ANG, 4850 Leigh Ave., Fort Smith, AR 72903-6096 DSN 778-5502.	Same as Originating Activity. Route scheduled no more than 72 hr in advance. Min	Continuous	188
IR120	188FW Arkansas ANG, 4850 Leigh Ave., Fort Smith, AR 72903-6096 DSN 778-5502.	Same as Originating Activity. Route scheduled no more than 72 hr in advance. Min	Continuous	81
IR121	188FW Arkansas ANG, 4850 Leigh Ave., Fort Smith, AR 72903-6096 DSN 778-5502.	Same as Originating Activity. Route scheduled no more than 72 hr in advance. Min	Continuous	119
IR122	49 OSS/OSTA, 700 Delaware Ave., Holloman AFB, NM 88330-8017 DSN 572-3244, C575-5	49 OSS/OSOS, 744 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3536, C575-5	Continuous (except Sunday 1000-1200 local)	28
IR123	301 OG/SUA, NAS JRB Fort Worth, TX 76127 DSN 739-6903/6904/6905, C817-782-6903/6	Same as Originating Activity	0700-2200 local; OT by NOTAM	403
IR124	301 OG/SUA, NAS JRB Fort Worth, TX 76127 DSN 739-6903/6904/6905, C817-782-6903/6	Same as Originating Activity	0700-2200 local; OT by NOTAM	245
IR126	7 OSS/OSR, 965 Ave. D-4, Ste. 109, Dyess AFB, TX 79607 DSN 461-3666, C325-696-36	7 OSS/OSOS, 1002 Ave. D-4, Dyess AFB, TX 79607 DSN 461-3665, C325-696-3665, fax	Continuous	807
IR127	12 OSS/OSOA, 501 I Street East, Randolph AFB, TX 78150-4333 DSN 487-5580, C210-6	99th FTS, 1450 5th Street East, Randolph AFB, TX 78150-5000 DSN 487-6746, C210-6	Sunrise-Sunset daily	243
IR128	7 OSS/A3R, 965 Ave. D-4, Ste. 109, Dyess AFB, TX 79606 DSN 461-3666, C325-696-36	7 OSS/A3R, 966 Ave. D-4, Ste. 109, Dyess AFB, TX 79606 DSN 461-3665, C325-696-36	Continuous	651
IR129	12 OSS/OSOA, 501 I Street East, Randolph AFB, TX 78150-4333 DSN 487-5580, C210-6	99th FTS, 1450 5th Street East, Randolph AFB, TX 78150-5000 DSN 487-6746, C210-6	Sunrise-Sunset daily	279
IR130	49 OSS/OSTA, 700 Delaware Ave., Holloman AFB, NM 88330-8017 DSN 572-3244, C575-5	49 OSS/OSOS, 744 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3536, C575-5	Daylight hours by NOTAM	28
IR131	49 OSS/OSTA, 700 Delaware Ave., Holloman AFB, NM 88330-8017 DSN 572-3244, C575-5	49 OSS/OSOS, 744 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3536, C575-5	Daylight hours by NOTAM	32
IR132	49 OSS/OSTA, 700 Delaware Ave., Holloman AFB, NM 88330-8017 DSN 572-3244, C575-5	49 OSS/OSOS, 744 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3536, C575-5	Daylight hours by NOTAM	32
IR133	49 OSS/OSOA, 700 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3244, C575-5	49 OSS/OSOS, 744 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3536, C575-5	0700-2300 local	330
IR134	49 OSS/OSOA, 700 Delaware Ave., Holloman AFB, NM 88440-8014 DSN 572-3244, C575-5	49 OSS/OSOS, 744 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3536, C575-5	Sunrise-0600Z++	205
IR135	COMTRAWING TWO, NAS Kingsville, TX 78363 DSN 876-6518/6283, C361-516-6518/6283/6	Same as Originating Activity	Sunrise-Sunset, daily	137
IR136	COMTRAWING TWO, NAS Kingsville, TX 78363 DSN 876-6518/6283, C361-516-6518/6283/6	Same as Originating Activity	Sunrise-Sunset, daily	162
IR137	58 OSS/OSOA, Kirtland AFB, 4249 Hangar Rd, NM 87117-5861 DSN 263-5979/5888/5701,	Same as Originating Activity	Continuous	219

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
IR139	301 OG/SUA, NAS JRB Fort Worth, TX 76127 DSN 739-6903/6904/6905, C817-782-6903/6	Same as Originating Activity	0700-2200 local; OT by NOTAM	102
IR141	49 OSS/OSTA, 700 Delaware Ave., Holloman AFB, NM 88330-8017 DSN 572-3244, C575-5	49 OSS/OSOS, 744 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3536, C575-5	Daylight hours by NOTAM	520
IR142	49 OSS/OSOA, 700 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3244, C575-5	49 OSS/OSOS, 744 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3536, C575-5	Sunrise-0600Z++	206
IR145	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850, C580-213-7850.	25 FTS/DISP, Vance AFB, OK 73705-5202 DSN 448-6038, C580-213-6038.	30 min after Sunrise-30 min before Sunset and active days per local directives	187
IR146	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850, C580-213-7850.	25 FTS/DISP, Vance AFB, OK 73705-5202 DSN 448-6038, C580-213-6038.	30 min after Sunrise-30 min before Sunset and active days per local directives	185
IR147	COMTRAWING TWO, NAS Kingsville, TX 78363 DSN 876-6518/6283, C361-516-6518/6283/6	Same as Originating Activity	Sunrise to 30 minutes after Sunset, daily	122
IR148	COMTRAWING TWO, NAS Kingsville, TX 78363 DSN 876-6518/6283, C361-516-6518/6283/6	Same as Originating Activity	Daily 0600-2230 local	172
IR149	COMTRAWING TWO, NAS Kingsville, TX 78363 DSN 876-6518/6283, C361-516-6518/6283/6	Same as Originating Activity	Daily 0600-2230 local	213
IR150	7 OSS/OSOR, 966 Ave. D-4, Ste. 117, Dyess AFB, TX 79607 DSN 461-3666, C325-696-3	7 OSS/OSOR, 966 Ave. D-4, Ste. 117, Dyess AFB, TX 79607 DSN 461-3665, C325-696-3	Continuous	295
IR154	97 OSS/DOA, 400 N. Sixth Street, Bldg 164, Rm 4, Altus AFB, OK 73522 DSN 866-609	97 OSS/OSK, 516 S. Sixth Street, Ste A, Altus AFB, OK 73523 DSN 866-7110/6617.	0830-0230 local Mon-Fri	220
IR155	97 OSS/DOA, 400 N. Sixth Street, Bldg 164, Rm 4, Altus AFB, OK 73522 DSN 866-609	97 OSS/OSK, 516 S. Sixth Street, Ste A, Altus AFB, OK 73523 DSN 866-7110/6617.	0830-0230 local Mon-Fri	213
IR164	188FW Arkansas ANG, 4850 Leigh Ave., Fort Smith, AR 72903-6096 DSN 778-5502.	Same as Originating Activity. Route scheduled no more than 72 hr in advance. Min	Continuous	108
IR166	COMTRAWING TWO, NAS Kingsville, TX 78363 DSN 876-6518/6283, C361-516-6518/6283/6	Same as Originating Activity	0600-2400 local, daily	184
IR167	COMTRAWING TWO, NAS Kingsville, TX 78363 DSN 876-6518/6283, C361-516-6518/6283/6	Same as Originating Activity	0600-2400 local, daily	119
IR169	47 OSS/OSOR, 570 2nd Street, Ste. 6, Laughlin AFB, TX 78843-5222 DSN 732-5864, C	87 FTS/DOS, 570 2nd Street, Laughlin AFB, TX 78843 DSN 732-5484, C830-298-5484.	Sunrise-Sunset daily	175
IR170	47 OSS/OSOR, 570 2nd Street, Ste. 6, Laughlin AFB, TX 78843-5222 DSN 732-5864, C	87 FTS/DOS, 570 2nd Street, Laughlin AFB, TX 78843 DSN 732-5484, C830-298-5484.	Sunrise-Sunset daily	191
IR171	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850, C580-213-7850.	25 FTS/DISP, Vance AFB, OK 73705-5202 DSN 448-6038, C580-213-6038.	30 min after Sunrise-30 min before Sunset and active days per local directives	175

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
IR172	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850, C580-213-7850.	Same as Originating Activity.	30 min after Sunrise-30 min before Sunset and active days per local directives	165
IR173	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850, C580-213-7850.	Same as Originating Activity.	30 min after Sunrise-30 min before Sunset and active days per local directives	160
IR174	188 FW ARKANSAS ANG, 4850 Leigh Ave, Fort Smith, AR 72903-6096 DSN 778-5502.	Same as Originating Activity. Route scheduled no more than 72 hr in advance. Min	Continuous	546
IR175	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850, C580-213-7850.	25 FTS/DISP, Vance AFB, OK 73705-5202 DSN 448-6038, C580-213-6038.	30 min after Sunrise-30 min before Sunset and active days per local directives	204
IR177	7 OSS/OSOR, 966 Ave. D-4, Ste. 117, Dyess AFB, TX 79607 DSN 461-3666, C325-696-3	7 OSS/OSOR, 966 Ave. D-4, Ste. 117, Dyess AFB, TX 79607 DSN 461-3665, C325-696-3	Continuous	363
IR178	7 OSS/A3R, 965 Ave. D-4, Ste. 109, Dyess AFB, TX 79606 DSN 461-3666, C325-696-36	Same as Originating Activity.	Continuous	1027
IR180	7 OSS/A3R, 965 Ave. D-4, Ste. 109, Dyess AFB, TX 79606 DSN 461-3666, C325-696-36	7 OSS/A3R, 966 Ave. D-4, Ste. 109, Dyess AFB, TX 79606 DSN 461-3665, C325-696-36	Continuous	562
IR181	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850, C580-213-7850.	25 FTS/DISP, Vance AFB, OK 73705-5202 DSN 448-6038, C580-213-6038.	30 min after Sunrise-30 min before Sunset and active days per local directives	175
IR182	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850, C580-213-7850.	Same as Originating Activity.	30 min after Sunrise-30 min before Sunset and active days per local directives	165
IR183	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850, C580-213-7850.	Same as Originating Activity.	30 min after Sunrise-30 min before Sunset and active days per local directives	160
IR185	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850, C580-213-7850.	25 FTS/DISP, Vance AFB, OK 73705-5202 DSN 448-6038, C580-213-6038.	30 min after Sunrise-30 min before Sunset and active days per local directives	204
IR192	49 OSS/OSOA, 700 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3244, C575-5	49 OSS/OSOS, 744 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3536, C575-5	Sunrise-0600Z++	562
IR193	97 OSS/DOA, 400 N Sixth St., Altus AFB, OK 73521 DSN 866-6098 C580-481-6098.	97 OSS/DOA, 400 N Sixth St., Ste 12, Altus AFB, OK 73521 DSN 866-7110.	0830-0230 local Mon-Fri	142
IR194	49 OSS/OSOA, 700 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3244, C575-5	49 OSS/OSOS, 744 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3536, C575-5	Sunrise-0600Z++	564
IR195	49 OSS/OSOA, 700 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3244, C575-5	49 OSS/OSOS, 744 Delaware Ave., Holloman AFB, NM 88330-8014 DSN 572-3536, C575-5	Sunrise-0600Z++	198

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
IR200	Commander Naval Air Warfare Center, Weapons Division, Code P529800E, (Naval Base	Commander Naval Air Warfare Center, Weapons Division, Code P529800E, (Naval Base	Sunrise-Sunset by NOTAM	650
IR203	Commander Strike Fighter Wing, US. Pacific Fleet, 001 (K) Street, Room 121, NAS	Same as Originating Activity	Daylight hours, OT by NOTAM	410
IR206	Commander Naval Air Warfare Center, Weapons Division, Code P3524, NAWS, Pt. Mugu	Commander Naval Air Warfare Center, Weapons Division, Code P3506, NAWS, Pt. Mugu	Daylight hours by NOTAM	120
IR207	Commander Strike Fighter Wing, US. Pacific Fleet, 001 (K) Street, Room 121, NAS	Same as Originating Activity	Daylight hours, OT by NOTAM	449
IR211	G-3, 3D MAW, MCAS Miramar, San Diego, CA 92145 DSN 267-5157, C858-577-5157. Non-working hours DSN 267-9517/9518, C858-577-9517/9518	Same as Originating Activity	Continuous	152
IR212	G-3, 3D MAW, MCAS Miramar, San Diego, CA 92145 DSN 267-5157, C858-577-5157. Non-working hours DSN 267-9517/9518, C858-577-9517/9518	Same as Originating Activity	Continuous	136
IR213	G-3, 3D MAW, MCAS Miramar, San Diego, CA 92145 DSN 267-5157, C858-577-5157. Non-working hours DSN 267-9517/9518, C858-577-9517/9518	Same as Originating Activity	Continuous	269
IR214	G-3, 3D MAW, MCAS Miramar, San Diego, CA 92145 DSN 267-5157, C858-577-5157. Non-working hours DSN 267-9517/9518, C858-577-9517/9518	Same as Originating Activity	Even numbered days only	265
IR216	G-3, 3D MAW, MCAS Miramar, San Diego, CA 92145 DSN 267-5157, C858-577-5157. Non-working hours DSN 267-9517/9518, C858-577-9517/9518	Same as Originating Activity	Even numbered days- daylight only	53
IR217	G-3, 3D MAW, MCAS Miramar, San Diego, CA 92145 DSN 267-5157, C858-577-5157. Non-working hours DSN 267-9517/9518, C858-577-9517/9518	Same as Originating Activity	Continuous	283
IR218	G-3, 3D MAW, MCAS Miramar, San Diego, CA 92145 DSN 267-5157, C858-577-5157. Non-working hours DSN 267-9517/9518, C858-577-9517/9518	Same as Originating Activity	Continuous	229
IR234	Commander AFFTC, 412 OSS/OSAA, 235 S Flightline Rd, Edwards AFB, CA 93523-6460 D	Commander AFFTC, 412 OSS/OSR, 300 E Yeager Blvd, Edwards AFB, CA 93524 DSN 527-4	Daylight hours by NOTAM	165
IR235	Commander AFFTC, 412 OSS/OSAA, 235 S Flightline Rd, Edwards AFB, CA 93523-6460 D	Commander AFFTC, 412 OSS/OSR, 300 E Yeager Blvd, Edwards AFB, CA 93524 DSN 527-4	Daylight hours by NOTAM	165
IR236	Commander AFFTC, 412 OSS/OSAA, 235 S Flightline Rd, Edwards AFB, CA 93523-6460 D	Commander AFFTC, 412 OSS/OSR, 300 E Yeager Blvd, Edwards AFB, CA 93524 DSN 527-4	0600-2200 local, daily	320
IR237	Commander AFFTC, 412 OSS/OSAA, 235 S Flightline Rd, Edwards AFB, CA 93523-6460 D	Commander AFFTC, 412 OSS/OSR, 300 E Yeager Blvd, Edwards AFB, CA 93524 DSN 527-4	Daylight hours by NOTAM	130
IR238	Commander AFFTC, 412 OSS/OSAA, 235 S Flightline Rd, Edwards AFB, CA 93523-6460 D	Commander AFFTC, 412 OSS/OSCS, 306 E. Popson, Edwards AFB, CA 93524-6680 DSN 527	Daylight hours by NOTAM	130
IR250	G-3, 3D MAW, MCAS Miramar, San Diego, CA 92145 DSN 267-4981, C858-577-4981. Non-working hours DSN 267-9517/9518, C858-577-9517/9518	Same as Originating Activity	Daylight hours on even even numbered days	251
IR252	G-3, 3D MAW, MCAS Miramar, San Diego, CA 92145 DSN 267-4981, C858-577-4981. Non-working hours DSN 267-9517/9518, C858-577-9517/9518	Same as Originating Activity	Daylight hours on odd numbered days	158
IR254	G-3, 3D MAW, MCAS Miramar, San Diego, CA 92145 DSN 267-4981, C858-577-4981. Non-working hours DSN 267-9517/9518, C858-577-9517/9518	Same as Originating Activity	Daylight hours, Mon-Fri	99

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
IR255	G-3, 3D MAW, MCAS Miramar, San Diego, CA 92145 DSN 267-4981, C858-577-4981. Non-working hours DSN 267-9517/9518, C858-577-9517/9518	Same as Originating Activity	Daylight hours, daily	67
IR264	60 OSS/OSO, 611 E St., Travis AFB, CA 94535 DSN 837-1073, C707-424-1073.	60 OSS/OSO, 611 E St., Travis AFB, CA 94535 DSN 837-5582, C707-424-5582.	By NOTAM	339
IR266	7 OSS/OSR, 965 Ave. D-4, Ste. 109, Dyess AFB, TX 79607 DSN 461-3666, C325-696-36	7 OSS/OSOS, 1002 Ave. D-4, Dyess AFB, TX 79607 DSN 461-3665, C325-696-3665, fax	Continuous	458
IR275	60 OSS/OSO, 611 E St., Travis AFB, CA 94535 DSN 837-1073, C707-424-1073.	60 OSS/OSO, 611 E St., Travis AFB, CA 94535 DSN 837-5582, C707-424-5582.	By NOTAM	409
IR280	60 OSS/OSO, 611 E St., Travis AFB, CA 94535 DSN 837-1073, C707-424-1073.	60 OSS/OSO, 611 E St., Travis AFB, CA 94535 DSN 837-5582, C707-424-5582.	By NOTAM	283
IR281	60 OSS/OSO, 611 E St., Travis AFB, CA 94535 DSN 837-1073, C707-424-1073.	60 OSS/OSO, 611 E St., Travis AFB, CA 94535 DSN 837-5582, C707-424-5582.	By NOTAM	296
IR282	60 OSS/OSO, 611 E St., Travis AFB, CA 94535 DSN 837-1073, C707-424-1073.	60 OSS/OSO, 611 E St., Travis AFB, CA 94535 DSN 837-5582, C707-424-5582.	By NOTAM	191
IR286	57 OSS/OSM, Nellis AFB, NV 89191 DSN 682-7891, C702-652-7891.	57 OSS/OSOS, 4450 Tyndall Ave., Nellis AFB, NV 89191 DSN 682-2040, C702-652-2040	Continuous	385
IR293	388 RANS/RST, 6606 Cedar Ln. bldg 1274, Hill AFB, UT 84056-5812 DSN 777-4401 C80	Same as Originating Activity.	By NOTAM	311
IR300	366 OSS/OSOS, Mountain Home AFB, ID 83648 DSN 728-2172/4607 C208-828-2172. Airsp	Same as Originating Activity. Scheduling requests 0730-1630 local Mon-Fri. After	By NOTAM	390
IR301	124 WG/OGAM (ANG), 3996 W. Aeronca St., Boise Air Terminal, ID 83705-8004 DSN 42	124 WG/OSS (ANG), 3996 W. Aeronca St., Boise Air Terminal, ID 83705-8004 DSN 422	Continuous or by NOTAM	402
IR302	124 WG/OGAM (ANG), 3996 W. Aeronca St., Boise Air Terminal, ID 83705-8004 DSN 42	124 WG/OSS (ANG), 3996 W. Aeronca St., Boise Air Terminal, ID 83705-8004 DSN 422	Continuous or by NOTAM	452
IR303	366 OSS/OSOA, Mountain Home AFB, 1050 Desert Street, Building 2215, Mountain Hom	Same as Originating Activity. Scheduling requests 0730-1630 local Mon-Fri. After	By NOTAM	278
IR304	366 OSS/OSOA, Mountain Home AFB 1050 Desert Street, Building 2215, Mountain Home	Same as Originating Activity. Scheduling requests 0730-1630 local Mon-Fri. After	By NOTAM	314
IR305	124 WG/OGAM (ANG), 3996 W. Aeronca St., Boise Air Terminal, ID 83705-8004 DSN 42	124 WG/OSS (ANG), 3996 W. Aeronca St., Boise Air Terminal, ID 83705-8004 DSN 422	Continuous or by NOTAM	421
IR307	124 WG/OGAM (ANG), 3996 W. Aeronca St., Boise Air Terminal, ID 83705-8004 DSN 42	124 WG/OSS (ANG), 3996 W. Aeronca St., Boise Air Terminal, ID 83705-8004 DSN 422	Continuous or by NOTAM	402
IR308	58 OSS/OSOA, Kirtland AFB, 4249 Hangar Rd, NM 87117-5861 DSN 263-5979/5888/5701,	Same as Originating Activity	Continuous	219
IR313	366 OSS/OSOA, 1050 Desert St., Building 2215, Mountain Home AFB, ID 83648 DSN 72	Same as Originating Activity. Scheduling requests 0730-1630 local Mon-Fri. After	By NOTAM	409
IR320	7 OSS/OSOR, 966 Ave. D-4, Ste. 118, Dyess AFB, TX 79607 DSN 461-3666, C325-696-3	7 OSS/OSOR, 1001 Ave. D-4, Ste. 107, Dyess AFB, TX 79607 DSN 461-3665, C325-696-	Continuous	853

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
IR324	62 OSS/OSK, 1172 Levitow Blvd., McChord Fld, WA 98438 DSN 382-3615, C253-982-361	62 OSS/OSO, 100 Main St., McChord Fld, WA 98438 DSN 382-9925, C253-982-9925. Dut	Continuous	174
IR325	62 OSS/OSK, 1172 Levitow Blvd., McCord Fld, WA 98438 DSN 382-3615, C253-982-3615	62 OSS/OSO, 100 Main St., McChord Fld, WA 98438 DSN 382-9925, C253-982-9925. Dut	Continuous	162
IR326	62 OSS/OSK, 1172 Levitow, McCord Fld, WA 98438 DSN 382-4057 C253-982-3615.	62 OSS/OSO, 100 Main St., McChord Fld, WA 98438 DSN 382-9925, C253-982-9925. Dut	Continuous	184
IR327	62 OSS/OSK, 1172 Levitow Blvd., McCord Fld, WA 98438 DSN 382-3615, C253-982-3615	62 OSS/OSO, 100 Main St., McChord Fld, WA 98438 DSN 382-9925, C253-982-9925. Dut	Continuous	167
IR328	62 OSS/OSK, 1172 Levitow Blvd., McCord Fld, WA 98438 DSN 382-3615, C253-982-3615	62 OSS/OSO, 100 Main St., McChord Fld, WA 98438 DSN 382-9925, C253-982-9925. Dut	Continuous	156
IR329	62 OSS/OSK, 1172 Levitow Blvd., McCord Fld, WA 98438 DSN 382-3615, C253-982-3615	62 OSS/OSO, 100 Main St., McChord Fld, WA 98438 DSN 382-9925, C253-982-9925. Dut	Continuous	156
IR330	62 OSS/OSK, 1172 Levitow Blvd., McCord Fld, WA 98438 DSN 382-3615, C253-982-3615	62 OSS/OSO, 100 Main St., McChord Fld, WA 98438 DSN 382-9925, C253-982-9925. Dut	Continuous	112
IR341	Commanding Officer (N38), NAS Whidbey Island, 3730 N. Charles Porter Ave., Oak H	Same as Originating Activity. Scheduling hours 0700-1600 local, Mon-Fri only. Sa	Continuous	293
IR342	Commanding Officer (N38), NAS Whidbey Island, 3730 N. Charles Porter Ave., Oak H	Same as Originating Activity. Scheduling hours 0700-1600 local, Mon-Fri only. Sa	Continuous	329
IR343	Commanding Officer (N38), NAS Whidbey Island, 3730 N. Charles Porter Ave., Oak H	Same as Originating Activity. Scheduling hours 0700-1600 local, Mon-Fri only. Sa	Continuous	472
IR344	Commanding Officer (N38), NAS Whidbey Island, 3730 N. Charles Porter Ave., Oak H	Same as Originating Activity. Scheduling hours 0700-1600 local, Mon-Fri only. Sa	Continuous	322
IR346	Commanding Officer (N38), NAS Whidbey Island, 3730 N. Charles Porter Ave., Oak H	Same as Originating Activity. Scheduling hours 0700-1600 local, Mon-Fri only. Sa	Continuous	333
IR348	Commanding Officer (N38), NAS Whidbey Island, 3730 N. Charles Porter Ave., Oak H	Same as Originating Activity. Scheduling hours 0700-1600 local, Mon-Fri only. Sa	Continuous	297
IR409	140th OG/CC Buckley ANGB Aurora, CO 80011-9546 DSN 847-9466, C720-847-9466.	140th OG/CC Buckley AFB Aurora, CO 80011-9546. Duty Hrs 0700-1700 DSN 847-9472,	0800-1600 local, Tue-Sat	194
IR414	140th Wing/Airspace Office Buckley AFB Aurora, CO 80011-9546 DSN 847-9470/9471,	140th Wing/Airspace Office Buckley AFB Aurora, CO 80011-9546. Duty Hrs 0700-1700	0800-1600 local, Tue-Sat; OT by NOTAM	106
IR415	140th OG/CC Buckley ANGB Aurora, CO 80011-9546 DSN 847-9466, C720-847-9466.	140th OG/CC Buckley AFB Aurora, CO 80011-9546. Duty Hrs 0700-1700 DSN 847-9472,	0800-1600 local, Tue-Sat; OT by NOTAM	174
IR416	140th Wing/Airspace Office Buckley AFB Aurora, CO 80011-9546 DSN 847-9470/9471,	140th Wing/Airspace Office Buckley AFB Aurora, CO 80011-9546. Duty Hrs 0700-1700	0800-1600 local, Tue-Sat; OT by NOTAM	320
IR418	388 RANS/RST, 6066 Cedar Lane, Hill AFB, UT 84056-5812 DSN 777-9384, C801-777-93	388 RANS/RST, 6066 Cedar Lane, Hill AFB, UT 84056-5812 DSN 777-4401, C801-777-44	0700-2400 local Mon-Thu, 0700-1800 local Fri, 0800-1700 local Sat	45

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
IR420	388 RANS/RST, 6066 Cedar Lane, Hill AFB, UT 84056-5812 DSN 777-9384, C801-777-93	388 RANS/RST, 6066 Cedar Lane, Hill AFB, UT 84056-5812 DSN 777-4401, C801-777-44	0700-2400 local Mon-Thu, 0700-1800 local Fri, 0800-1700 local Sat	40
IR424	140th Wing/Airspace Office Buckley AFB Aurora, CO 80011-9546 DSN 847-9470/9471,	140th Wing/Airspace Office Buckley AFB Aurora, CO 80011-9546. Duty Hrs 0700-1700	0800-1600 local, Tue-Sat; OT by NOTAM	152
IR425	Commander AFFTC, 412 OSS/OSAA, 235 S. Flightline Rd. Edwards AFB, CA 93523-6460	Commander AFFTC, 412 OSS/OSR, 300 E Yeager Blvd, Edwards AFB, CA 93524 DSN 527-4	Sunrise-Sunset by NOTAM	650
IR473	28 OSS/OSXA, 1956 Scott Dr., Ste. 201, Ellsworth AFB, SD 57706-4710 DSN 675-1230	28 OSS/OSXS, 1956 Scott Dr., Ste. 201, Ellsworth AFB, SD 57706-4710 DSN 675-4246	Continuous	708
IR479	120 FW/OSAD (ANG) 2800 Airport Ave. B, Great Falls, MT 59404 DSN 791-0186, C406-	Same as Originating Activity	By NOTAM	580
IR480	120 FW/OSAD (ANG) 2800 Airport Ave. B, Great Falls, MT 59404 DSN 791-0186, C406-	Same as Originating Activity	By NOTAM	418
IR485	28 OSS/OSXA, 1956 Scott Dr., Ste. 201, Ellsworth AFB, SD 57706-4710 DSN 675-1230	28 OSS/OSXS, 1956 Scott Dr., Ste. 201, Ellsworth AFB, SD 57706-4710 DSN 675-4246	Continuous	305
IR492	28 OSS/OSXA, 1956 Scott Dr., Ste. 201, Ellsworth AFB, SD 57706-4710 DSN 675-1230	28 OSS/OSXS, 1956 Scott Dr., Ste. 201, Ellsworth AFB, SD 57706-4710 DSN 675-4246	Continuous	582
IR499	28 OSS/OSXA, 1956 Scott Dr., Ste. 201, Ellsworth AFB, SD 57706-4710 DSN 675-1230	28 OSS/OSXS, 1956 Scott Dr., Ste. 201, Ellsworth AFB, SD 57706-4710 DSN 675-4246	Continuous	355
IR500	7 OSS/OSOR, 966 Ave. D-4, Ste. 117, Dyess AFB, TX 79607 DSN 461-3666, C325-696-3	7 OSS/OSOR, 966 Ave. D-4, Ste. 117, Dyess AFB, TX 79607 DSN 461-3665, C325-696-3	Continuous	542
IR501	7 OSS/OSOR, 966 Ave. D-4, Ste. 117, Dyess AFB, TX 79607 DSN 461-3666, C325-696-3	7 OSS/OSOR, 966 Ave. D-4, Ste. 117, Dyess AFB, TX 79607 DSN 461-3665, C325-696-3	Continuous	724
IR504	509 OSS/OSOS, 905 Spirit Blvd., Whiteman AFB, MO 65305 DSN 975-1713/1754, C660-6	Same as Originating Activity	Continuous	269
IR505	114 FW (ANG), Joe Foss Field, Siouz Falls, SD 57104-0264 DSN 798-7754/46, C605-9	Same as Originating Activity	Daylight hours, Mon-Sat, OT By NOTAM	138
IR508	114 FW (ANG), Joe Foss Field, Sioux Falls, SD 57104-0264 DSN 798-7745, C605-988-	114 FW (ANG), Joe Foss Field, Sioux Falls, SD 57104-0264 DSN 798-7754/7746, C605	Daylight hours, Mon-Sat, OT by NOTAM	239
IR509	114 FW (ANG), Joe Foss Field, Sioux Falls, SD 57104-0264 DSN 798-7745, C605-988-	114 FW (ANG), Joe Foss Field, Sioux Falls, SD 57104-0264 DSN 798-7754/7746, C605	Daylight hours, Tue-Sat, OT by NOTAM	306
IR513	DET 1, 184 IW, Smoky Hill ANG Range, 8429 W Farrelly Rd, Salina, KS 67401-9407.	Same as Originating Activity	Continuous	383
IR514	114 FW (ANG), Joe Foss Field, Sioux Falls, SD 57104-0264 DSN 798-7754/46, C605-9	Same as Originating Activity	Daylight hours, Tue-Sat, OT by NOTAM	223
IR518	114 FW (ANG), Joe Foss Field, Sioux Falls, SD 57104-0264 DSN 798-7745, C605-988-	114 FW (ANG), Joe Foss Field, Sioux Falls, SD 57104-0264 DSN 798-7754/7746, C605	Daylight hours, Mon-Sat, OT by NOTAM	239
IR526	DET 1, 184 IW, Smoky Hill ANG Range, 8429 W Farrelly Rd, Salina, KS 67401-9407.	Same as Originating Activity	Continuous	307
IR527	183 FW/OSF, Capital Airport, Springfield, IL 62707 DSN 892-8202.	Same as Originating Activity	Sunrise-Sunset	173
IR592	188FW ARKANSAS ANG, 4850 Leigh Ave, Fort Smith, AR 72903-6096 DSN 778-5502.	Same as Originating Activity. Route scheduled no more than 72 hr in advance. Min	Continuous	649
IR605	148th FIG (ANG), Duluth Intl., MN 55811 DSN 825-7265.	Same as Originating Activity	Daily 1400-0500Z++, available OT	135

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
IR606	148th FIG (ANG), Duluth Intl., MN 55811 DSN 825-7265.	Same as Originating Activity	Daily 1400-0500Z++, Usage between 0500-1400Z++ is allowable	135
IR608	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ Mon-Fri, weekends by NOTAM	258
IR609	5 OSS/OSTC, 300 Summit Dr., Minot AFB, ND 58705-5044 DSN 453-2967, C701-723-2967	23 BS/DOS, 300 Summit Dr., Minot AFB, ND 58705 DSN 453-2002/3527, C701-723-2002.	Continuous	795
IR610	5 OSS/OSTC, 300 Summit Dr., Minot AFB, ND 58705-5044 DSN 453-2967, C701-723-2967	23 BS/DOS, 300 Summit Dr., Minot AFB, ND 58705 DSN 453-2002/3527, C701-723-2002/	Continuous	777
IR613	114 FW (ANG), Joe Foss Field, Sioux Falls, SD 57104-0264 DSN 798-7754/46, C605-9	Same as Originating Activity	Daylight hours, Tue-Sat, OT by NOTAM	198
IR614	183 FW/OSF, Capital Airport, Springfield, IL 62707 DSN 892-8202.	Same as Originating Activity	Daylight hours	135
IR618	JFAC-IN/DET 1, Atterbury ANG Range, Bldg 124, Camp Atterbury, IN 46124 DSN 569-2	Same as Originating Activity	Sunrise-Sunset, Tue-Sun, OT by NOTAM	134
IR644	5 OSS/OSTC, 300 Summit Dr., Minot AFB, ND 58705-5044 DSN 453-2967, C701-723-2967	23 BS/DOS, 300 Summit Dr., Minot AFB, ND 58705 DSN 453-2639/3527, C701-723-2639/	Continuous	606
IR649	5 OSS/OSTC, 300 Summit Dr., Minot AFB, ND 58705-5044 DSN 453-2967, C701-723-2967	23 BS/DOS, 300 Summit Dr., Minot AFB, ND 58705 DSN 453-2639/3527, C701-723-2639/	Continuous	186
IR654	5 OSS/OSTC, 300 Summit Dr., Minot AFB, ND 58705-5044 DSN 453-2967, C701-723-2967	23 BS/DOS, 300 Summit Dr., Minot AFB, ND 58705 DSN 453-2002/3527, C701-723-2002/	Continuous	688
IR655	5 OSS/OSTC, 300 Summit Dr., Minot AFB, ND 58705-5044 DSN 453-2967, C701-723-2967	23 BS/DOS, 300 Summit Dr., Minot AFB, ND 58705 DSN 453-2002/3527, C701-723-2002/	Continuous	1035
IR656	5 OSS/OSTC, 300 Summit Dr., Minot AFB, ND 58705-5044 DSN 453-2967, C701-723-2967	23 BS/DOS, 300 Summit Dr., Minot AFB, ND 58705 DSN 453-2002/3527, C701-723-2002/	Continuous	940
IR678	5 OSS/A-3C, 300 Summit Dr., Minot AFB, ND 58705-5044 DSN 453-2967, C701-723-2967	23 BS/DOS, 300 Summit Dr., Minot AFB, ND 58705-5044 DSN 453-2002/3527, C701-723-	Continuous	524
IR714	COMSTRKFIGHTWINGLANT, Oceana NAS, Virginia Beach, VA 23460 DSN 433-9141, C757-43	FACSFAC VACAPES, Oceana NAS, Virginia Beach, VA 23460 DSN 433-1228, C757-433-122	Continuous	335
IR715	COMSTRKFIGHTWINGLANT, Oceana NAS, Virginia Beach, VA 23460 DSN 433-9141, C757-43	FACSFAC VACAPES, Oceana NAS, Virginia Beach, VA 23460 DSN 433-1228, C757-433-122	Continuous	397
IR718	COMSTRKFIGHTWINGLANT, Oceana NAS, Virginia Beach, VA 23460 DSN 433-9141, C757-43	FACSFAC VACAPES, Oceana NAS, Virginia Beach, VA 23460 DSN 433-1228, C757-433-122	Continuous	493
IR719	CSFWL, Oceana NAS, Virginia Beach, VA 23460 DSN 433-9696, C757-433-9696.	FACSFAC VACAPES, Oceana NAS, Virginia Beach, VA 23460 DSN 433-1228, C757-433-122	Continuous	424
IR720	COMSTRKFIGHTWINGLANT, Oceana NAS, Virginia Beach, VA 23460 DSN 433-9141, C757-43	FACSFAC VACAPES, Oceana NAS, Virginia Beach, VA 23460 DSN 433-1228, C757-433-122	Continuous	407
IR721	20 OSS/OSOA, Shaw AFB, SC 29152-5000 DSN 965-1121/1122, C803-895-1121/1122, Fax	20 OSS/OSOS, Shaw AFB, SC 29152 Duty hrs DSN 965-1118/1119, C803-895-1118/1119.	Continuous	199

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
IR723	FACSFAC, Penscola, FL 32508-5217, DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ Mon-Fri, occasionally weekends	262
IR726	20 OSS/OSOA, Shaw AFB, SC 29152-5000 DSN 965-1121/1122, C803-895-1121/1122, Fax	20 OSS/OSOS, Shaw AFB, SC 29152-5000 Duty hours DSN 965-1118/1119, C803-895-1118	Continuous	144
IR743	20 OSS/OSOA, Shaw AFB, SC 29152-5000 DSN 965-1121/1122, C803-895-1121/1122, Fax	20 OSS/OSOS, Shaw AFB, SC 29152 Duty hrs DSN 965-1118/1119, C803-895-1118/1119.	Continuous	144
IR760	COMSTRKFIGHTWINGLANT, Oceana NAS, Virginia Beach, VA 23460 DSN 433-9141, C757-43	FACSFAC VACAPES, Oceana NAS, Virginia Beach, VA 23460 DSN 433-1228, C757-433-122	Continuous	362
IR761	COMSTRKFIGHTWINGLANT, Oceana NAS, Virginia Beach, VA 23460 DSN 433-9141, C757-43	FACSFAC VACAPES, Oceana NAS, Virginia Beach, VA 23460 DSN 433-1228, C757-433-122	Continuous	324
IR762	COMSTRKFIGHTWINGLANT, Oceana NAS, Virginia Beach, VA 23460 DSN 433-9141, C757-43	FACSFAC VACAPES, Oceana NAS, Virginia Beach, VA 23460 DSN 433-1228, C757-433-122	Continuous	324
IR800	Eastern Air Defense (EADS) DSN 587-6247/6313.	Same as Originating Activity	Continuous	894
IR801	174 FW, Det 1, Ft. Drum, NY 13608 DSN 772-5990/2835, C315-772-5990.	Same as Originating Activity	Continuous	296
IR802	5 OSS/OSTC, 300 Summit Dr., Minot AFB, ND 58705-5044 DSN 453-2967, C701-723-2967	23 BS/DOS, 300 Summit Dr., Minot AFB, ND 58705 DSN 453-2002/3527, C701-723-2002/	Continuous	542
IR803	5 OSS/OSTC, 300 Summit Dr., Minot AFB, ND 58705-5044 DSN 453-2967, C701-723-2967	23 BS/DOS, 300 Summit Dr., Minot AFB, ND 58705 DSN 453-2002/3527, C701-723-2002/	Continuous	384
IR804	5 OSS/OSTC, 300 Summit Dr., Minot AFB, ND 58705-5044 DSN 453-2967, C701-723-2967	23 BS/DOS, 300 Summit Dr., Minot AFB, ND 58705 DSN 453-2002/3527, C701-723-2002/	Continuous	1217
IR805	5 OSS/OSTC, 300 Summit Dr., Minot AFB, ND 58705-5044 DSN 453-2967, C701-723-2967	23 BS/DOS, 300 Summit Dr., Minot AFB, ND 58705 DSN 453-2002/3527, C701-723-2002/	Continuous	587
IR850	Commander, Naval Air Warfare Center Weapons Division, Code 52EOOOE, NAWS, Pt. Mu	Commander, Naval Air Warfare Center Weapons Division, Code 52911GE, NAWS, Pt. Mu	Sunrise-Sunset by NOTAM	295
IR851	Commander, Naval Air Warfare Center Weapons Division, Code 52EOOOE, NAWS, Pt. Mu	Commander, Naval Air Warfare Center Weapons Division, Code 52911GE, NAWS, Pt. Mu	Daily Sunrise-Sunset	390
IR852	Commander, Naval Air Warfare Center Weapons Division, Code 52EOOOE, NAWS, Pt. Mu	Commander, Naval Air Warfare Center Weapons Division, Code 52911GE, NAWS, Pt. Mu	Sunrise-Sunset	199
IR900	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	354 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-9327, C907-377-9327/3125.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	198
IR901	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	159
IR902	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	279
IR903	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	194

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
IR905	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	292
IR909	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	354 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-9372/3125, C907-377-9372/3125.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	76
IR911	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	159
IR912	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	177
IR913	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	194
IR915	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	292
IR916	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	354 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-9327, C907-377-9327/3125.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	135
IR917	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	354 OSS/OSCR, Eielson AFB, AK 99702 DSN 317-377-9327, C907-377-9327/3125.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	121
IR918	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	354 OSS/OSCR, Eielson AFB, AK 99702 DSN 317-377-9327, C907-377-9327/3125.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	121
IR919	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	354 OSS/OSCR, Eielson AFB, AK 99702 DSN 317-377-9327, C907-377-9327/3125.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	272
IR921	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	354 OSS/OSCR, Eielson AFB, AK 99702 DSN 317-377-9327, C907-377-9327/3125.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	225
IR922	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	354 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-9327, C907-377-9327/3125.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	266
IR923	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	354 OSS/OSCR, Eielson AFB, AK 99702 DSN 317-377-9327, C907-377-9327/3125.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	231
IR939	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	354 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-9372/3125, C907-377-9372/3125.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	76
IR952	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	354 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-9372/3125, C907-377-9372/3125.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	672
IR953	611 AOG/CC, 9480 Pease Ave., Ste. 102, Elmendorf AFB, AK 99506-2100 DSN 317-552-	354 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-9372/3125, C907-377-9372/3125.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	476
IR983	PACAF/DOCS, 25 E ST, SUITE I232, HICKAM AFB, HI 96853-5426 DSN 449-4173.	36 OSS/OSA, UNIT 14035, APO AP 96542-4035 DSN(315)-366-2770.	Continuous	552
SR038	Base Operations, Lawson AAF, Fort Benning, Ga. DSN 835-3524/2471 C706-545-3524/2	Same as Originating Activity	Continuous	159
SR039	Base Operations, Lawson AAF, Fort Benning, Ga. DSN 835-3524/2471 C706-545-3524/2	Same as Originating Activity	Continuous	95

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
SR040	94/OSS Dobbins AFB, GA 30069-5009 DSN 625-3498, C678-655-3498.	Same as Originating Activity	1200-0300Z ++	107
SR059	118 AW, 240 Knapp Blvd, Nashville, TN 37217, DSN 778-6362/6342, C615-399-5662/56	Same as Originating Activity	Continuous	178
SR060	118 AW, 240 Knapp Blvd, Nashville, TN 37217, DSN 778-6362/6342, C615-399-5662/56	Same as Originating Activity	Continuous	173
SR061	118 AW, 240 Knapp Blvd, Nashville, TN 37217, DSN 778-6362/6342, C615-399-5662/56	Same as Originating Activity	Continuous	125
SR062	118 AW, 240 Knapp Blvd, Nashville, TN 37217, DSN 778-6362/6342, C615-399-5662/56	Same as Originating Activity	Continuous	122
SR069	908 OSF/DOO, 430 W Maxwell Blvd, Bldg 1050, Maxwell AFB, AL 36112-6591 DSN 493-7	Same as Originating Activity	1400-0400Z++	124
SR070	908 OSF/DOO, 430 W Maxwell Blvd, Bldg 1050, Maxwell AFB, AL 36112-6591 DSN 493-7	Same as Originating Activity	1400-0400Z++	155
SR071	908 OSF/DOO, 430 W Maxwell Blvd, Bldg 1050, Maxwell AFB, AL 36112-6591 DSN 493-7	Same as Originating Activity	1300-0500Z++	150
SR072	908 OSF/DOO, 430 W Maxwell Blvd, Bldg 1050, Maxwell AFB, AL 36112-6591 DSN 493-7	Same as Originating Activity	1300-0500Z++	156
SR073	164 AW (ANG), Memphis Intl, TN 38118 DSN 726-7131.	Columbus AFB, MS DSN 742-7840/7847 C662-434-7840/7847.	Continuous	148
SR074	164 AW (ANG), Memphis Intl, TN 38118 DSN 726-7131.	Columbus AFB, MS DSN 742-7840/7847 C662-434-7840/7847.	Continuous	164
SR075	164 AW (ANG), Memphis Intl, TN 38118 DSN 726-7131.	Columbus AFB, MS DSN 742-7840/7847 C662-434-7840/7847.	Continuous	120
SR1001	3 OSS/DOH, 10460 L Street, Elmendorf AFB, AK 99506-2670 DSN 317-552-4658, C907-5	3 OSS/DOTS, DSN 317-552-3457, C907-552-3457.	Continuous	172
SR1002	3 OSS/DOH, 10460 L Street, Elmendorf AFB, AK 99506-2670 DSN 317-552-4658, C907-5	3 OSS/DOTS, DSN 317-552-3457, C907-552-3457.	Continuous	77
SR1003	3 OSS/DOH, 10460 L Street, Elmendorf AFB, AK 99506-2670 DSN 317-552-4658, C907-5	3 OSS/DOTS, DSN 317-552-3457, C907-552-3457.	Continuous	109
SR1004	3 OSS/DOH, 10460 L Street, Elmendorf AFB, AK 99506-2670 DSN 317-552-4658, C907-5	3 OSS/DOTS, DSN 317-552-3457, C907-552-3457.	Continuous	77
SR1005	3 OSS/DOH, 10460 L Street, Elmendorf AFB, AK 99506-2670 DSN 317-552-4658, C907-5	3 OSS/DOTS, DSN 317-552-3457, C907-552-3457.	Continuous	138
SR1006	3 OSS/DOH, 10460 L Street, Elmendorf AFB, AK 99506-2670 DSN 317-552-4658, C907-5	3 OSS/DOTS, DSN 317-552-3457, C907-552-3457.	Continuous	53
SR1007	3 OSS/DOH, 10460 L Street, Elmendorf AFB, AK 99506-2670 DSN 317-552-4658, C907-5	3 OSS/DOTS, DSN 317-552-3457, C907-552-3457.	Continuous	71
SR1008	3 OSS/DOH, 10460 L Street, Elmendorf AFB, AK 99506-2670 DSN 317-552-4658, C907-5	3 OSS/DOTS, DSN 317-552-3457, C907-552-3457.	Continuous	110
SR1009	3 OSS/DOH, 10460 L Street, Elmendorf AFB, AK 99506-2670 DSN 317-552-4658, C907-5	3 OSS/DOTS, DSN 317-552-3457, C907-552-3457.	Continuous	182
SR101	1 SOG/OGO, Hurlburt Field, FL 32544 DSN 579-7812/7813, C850-884-7812/7813.	Same as Originating Activity	Continuous	907
SR1010	3 OSS/DOH, 10460 L Street, Elmendorf AFB, AK 99506-2670 DSN 317-552-4658, C907-5	3 OSS/DOTS, DSN 317-552-3457, C907-552-3457.	Continuous	147
SR102	1 SOG/OGO, Hurlburt Field, FL 32544 DSN 579-7812/7813, C850-884-7812/7813.	Same as Originating Activity	Continuous	291
SR103	1 SOG/OGO, Hurlburt Field, FL 32544 DSN 579-7812/7813, C850-884-7812/7813.	Same as Originating Activity	Continuous	433
SR104	1 SOG/OGO, Hurlburt Field, FL 32544 DSN 579-7812/7813, C850-884-7812/7813.	Same as Originating Activity	Continuous	823
SR105	1 SOG/OGO, Hurlburt Field, FL 32544 DSN 579-7812/7813, C850-884-7812/7813.	Same as Originating Activity	Continuous	227
SR106	1 SOG/OGO, Hurlburt Field, FL 32544 DSN 579-7812/7813, C850-884-7812/7813.	Same as Originating Activity	Continuous	426
SR119	1 SOG/OGO, Hurlburt Field, FL 32544 DSN 579-7812/7813, C850-884-7812/7813.	Same as Originating Activity	Continuous	800

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
SR137	14 OSS/OSOP, Columbus AFB, MS 39710-5000 DSN 742-7560/7633, C662-434-7560/7633.	37/41 FTS, Columbus AFB, MS 39710-5000 DSN 742-7666/7667, C662-434-7666/7667.	SR-SS, Daily	143
SR138	14 OSS/OSOP, Columbus AFB, MS 39710 DSN 742-7560/7633, C662-434-7560/7633.	37/41 FTS, Columbus AFB, MS 39710 DSN 742-7666/7667, C662-434-7666/7667.	SR-SS, Daily	143
SR166	437 OSS/OSTA, Charleston AFB, SC 29404-5054 DSN 673-5613, C843-963-5613.	20 OSS/OSOS, Shaw AFB, SC 29152-5000 DSN 965-1118/1119, C803-895-1118/1119, FAX	Continuous	153
SR200	58 OSS/DOO, Kirtland AFB, NM 87117-5861 DSN 263-5979/5888/5701, C505-853-5979/58	Same as Originating Activity	Continuous	242
SR201	58 OSS/DOO, Kirtland AFB, NM 87117-5861 DSN 263-5979/5888/5701, C505-853-5979/58	Same as Originating Activity	Continuous	421
SR205	97 OSS/DOA, 400 N. 6th Street, Altus AFB, OK 73521 DSN 866-6098, C580-481-6098.	97 OSS/OSK 400 N. 6th Street, Suite 12, Altus AFB, OK 73521 DSN 866-7110, C580-4	0830-0230 Local Mon-Fri	88
SR206	97 OSS/DOA, 400 N. 6th Street, Altus AFB, OK 73521 DSN 866-6098, C580-481-6098.	97 OSS/OSK 400 N. 6th Street, Suite 12, Altus AFB, ok 73521 dsn 866-7110, C580-4	0830-0230 Local Mon-Fri	99
SR208	97 OSS/DOA, 400 N. 6th Street, Altus AFB, OK 73521 DSN 866-6098, C580-481-6098.	97 OSS/OSK, 400 N. 6th Street, Suite 12, Altus AFB, OK DSN 866-7110, C580-481-71	0830-0230 Local Mon-Fri	116
SR210	58 OSS/DOO, Kirtland AFB, NM 87117-5861 DSN 263-5979/5888/5701, C505-853-5979/58	Same as Originating Activity	Continuous	148
SR211	58 OSS/DOO, Kirtland AFB, NM 871175861 DSN 263-5979/5888/5701, C505-853-5979/588	Same as Originating Activity	Continuous	189
SR212	27 SOSS/OSOA, 511 N Torch Blvd, Building 300, Cannon AFB, NM 88103 DSN 681-2521.	27 SOSS/OSOS, 511 N Torch Blvd, Building 300, Cannon AFB, NM 88103 DSN 681-2276,	Continuous	230
SR213	27 SOSS/OSOA, 511 N Torch Blvd, Building 300, Cannon AFB, NM 88103 DSN 681-2521.	27 SOSS/OSOS, 511 N Torch Blvd, Building 300, Cannon AFB, NM 88103 DSN 681-2276,	Continuous	235
SR214	27 SOSS/OSOA, 511 N Torch Blvd, Building 300, Cannon AFB, NM 88103 DSN 681-2521.	27 SOSS/OSOS, 511 N Torch Blvd, Building 300, Cannon AFB, NM 88103 DSN 681-2276,	Continuous	249
SR216	97 OSS/DOA, 400 N. 6th Street, Altus AFB, OK 73521 DSN 866-6098, C580-481-6098.	97 OSS/OSK, 400 N. 6th Street, Suite 12, Altus AFB, OK 73521 DSN 866-7110, C580-	0830-0230 Local Mon-Fri	111
SR217	97 OSS/DOA, 400 N. 6th Street, Altus AFB, OK 73521 DSN 866-6098, C580-481-6098.	97 OSS/OSK, 400 N. 6th Street, Suite 12, Altus AFB, OK 73521 DSN 866-7110, C580-	0830-0230 Local Mon-Fri	114
SR218	19 OSS/OSK, 380 Chief Williams Drive, Little Rock AFB, AR 72099-4976 DSN 731-330	19 OSS/OSO, 320 Thomas Avenue, Little Rock AFB, AR 72099-4976 DSN 731-6850, C501	Continuous	251
SR219	19 OSS/OSK, 380 Chief Williams Drive, Little Rock AFB, AR 72099-4976 DSN 731-330	19 OSS/OSO, 320 Thomas Avenue, Little Rock AFB, AR 72099-4976 DSN 731-6850, C501	Continuous	226
SR220	19 OSS/OSK, 380 Chief Williams Drive, Little Rock AFB, AR 72099-4976 DSN 731-330	19 OSS/OSO, 320 Thomas Avenue, Little Rock AFB, AR 72099-4976 DSN 731-6850, C501	Continuous	180
SR221	19 OSS/OSO, 320 Thomas Avenue, Little Rock AFB, AR 72099-4976 DSN 731-3358, C501	Same as Originating Activity	Continuous	511
SR222	19 OSS/OSK, 380 Chief Williams Drive, Little Rock AFB, AR 72099-4976 DSN 731-330	19 OSS/OSO, 320 Thomas Avenue, Little Rock AFB, AR 72099-4976 DSN 731-6850, C501	Continuous	131

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
SR223	19 OSS/OSK, 380 Chief Williams Drive, Little Rock AFB, AR 72099-4976 DSN 731-330	19 OSS/OSO, 320 Thomas Avenue, Little Rock AFB, AR 72099-4976 DSN 731-6850, C501	Continuous	137
SR224	19 OSS/OSK, 380 Chief Williams Drive, Little Rock AFB, AR 72099-4976 DSN 731-330	19 OSS/OSO, 320 Thomas Avenue, Little Rock AFB, AR 72099-4976 DSN 731-6850, C501	Continuous	226
SR225	19 OSS/OSK, 380 Chief Williams Drive, Little Rock AFB, AR 72099-4976 DSN 731-330	19 OSS/OSO, 320 Thomas Avenue, Little Rock AFB, AR 72099-4976 DSN 731-6850, C501	Continuous	279
SR226	19 OSS/OSK, 380 Chief Williams Drive, Little Rock AFB, AR 72099-4976 DSN 731-330	19 OSS/OSO, 320 Thomas Avenue, Little Rock AFB, AR 72099-4976 DSN 731-6850, C501	Continuous	73
SR227	19 OSS/OSK, 380 Chief Williams Drive, Little Rock AFB, AR 72099-4976 DSN 731-330	19 OSS/OSO, 320 Thomas Avenue, Little Rock AFB, AR 72099-4976 DSN 731-6850, C501	Continuous	231
SR228	301 OG/SUA, NAS JRB Fort Worth, TX DSN 739-6903/6904/6905, C817-782-6903/6904/69	Same as Originating Activity	0700-2200 local; other times by NOTAM	193
SR229	19 OSS/OSK, 380 Chief Williams Drive, Little Rock AFB, AR 72099-4976 DSN 731-330	19 OSS/OSO, 320 Thomas Avenue, Little Rock AFB, AR 72099-4976 DSN 731-6850, C501	Continuous	234
SR230	19 OSS/OSK, 380 Chief Williams Drive, Little Rock AFB, AR 72099-4976 DSN 731-330	19 OSS/OSO, 320 Thomas Avenue, Little Rock AFB, AR 72099-4976 DSN 731-6850, C501	Continuous	248
SR231	19 OSS/OSK, 380 Chief Williams Drive, Little Rock AFB, AR 72099-4976 DSN 731-330	19 OSS/OSO, 320 Thomas Avenue, Little Rock AFB, AR 72099-4976 DSN 731-6850, C501	Continuous	243
SR232	19 OSS/OSK, 380 Chief Williams Drive, Little Rock AFB, AR 72099-4976 DSN 731-330	19 OSS/OSO, 320 Thomas Avenue, Little Rock AFB, AR 72099-4976 DSN 731-6850, C501	Continuous	185
SR233	7 WG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	203
SR234	7 WG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	126
SR235	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850 C580-213-7850.	8 FTS/DOO, Vance AFB, OK 73705-5202 DSN 448-6037 C580-213-6037	Sunrise -Sunset and active days per local directives	126
SR236	317 AG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	196
SR237	19 OSS/OSO, 320 Thomas Avenue, Little Rock AFB, AR 72099-4976 DSN 731-3358, C501	Same as Originating Activity	Continuous	107
SR238	19 OSS/OSK, 380 Chief Williams Drive, Little Rock AFB, AR 72099-4976 DSN 731-330	19 OSS/OSO, 320 Thomas Avenue, Little Rock AFB, AR 72099-4976 DSN 731-6850, C501	Continuous	98
SR239	19 OSS/OSO, 320 Thomas Avenue, Little Rock AFB, AR 72099-4976 DSN 731-3358, C501	314 OSS/OSK, 380 CMSGT Williams Street, Little Rock AFB, AR 72099-4976 DSN 731-3	Continuous	139
SR240	7 WG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	134
SR241	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850 C580-213-7850.	8 FTS/DOO, Vance AFB, OK 73705-5202 DSN 448-6037 C580-213-6037.	Sunrise-Sunset and active days per local directives	143
SR242	317 AG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	193
SR243	7 WG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	163
SR244	317 AG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	119

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
SR245	7 WG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	129
SR246	19 OSS/OSK, 380 Chief Williams Drive, Little Rock AFB, AR 72099-4976 DSN 731-330	19 OSS/OSO, 320 Thomas Avenue, Little Rock AFB, AR 72099-4976 DSN 731-6850, C501	Continuous	186
SR247	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850 C580-213-7850.	8 FTS/DOO, Vance AFB, OK 73705-5202 DSN 448-6037 C580-213-6037.	Sunrise-Sunset and active days per local directives	143
SR249	7 WG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	197
SR250	317 AG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	81
SR251	7 WG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	73
SR253	71 FTS/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850 C580-213-7850.	8FTS/DOO, Vance AFB, OK 73705-5202 DSN 448-6037 C580-213-6037.	Sunrise-Sunset and active days per local directives	126
SR255	7 WG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	85
SR258	317 WG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	171
SR261	317 WG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	133
SR267	7 WG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	171
SR270	301 OG/SUA, NAS JRB Fort Worth, TX DSN 739-6903/6904/6905, C817-782-6903/6904/69	Same as Originating Activity	0700-2200 local; other times by NOTAM	182
SR271	80 OSS/OSOA, 1911 J. Ave. Ste. 3, Sheppard AFB, TX 76311 DSN 736-4970, C940-676-4970.	Same as Originating Activity	1 hour after sunrise - 1 hour before sunset	171
SR272	81 OSS/OSOA, 1911 J. Ave. Ste. 3, Sheppard AFB, TX 76311 DSN 736-4970, C940-676-4970.	Same as Originating Activity	1 hour after sunrise - 1 hour before sunset	159
SR273	7 WG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	156
SR274	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850, C580-213-7850.	Same as Originating Activity	Sunrise to Sunset daily	169
SR275	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850, C580-213-7850.	Same as Originating Activity	Sunrise to Sunset daily	169
SR276	47 OSS/OSOR, 570 2nd Street., Suite 6, Laughlin AFB, TX 78843 DSN 732-5864, C830	86 FTS/DOS, 307 2nd Street, Laughlin AFB, TX 78843 DSN 732-5584, C830-298-5584.	Sunrise-Sunset daily	184
SR277	47 OSS/OSOR, 570 2nd Street, Suite. 6, Laughlin AFB, TX 78843 DSN 732-5864, C830	86 FTS/DOS, 307 2nd Street, Laughlin AFB, TX 78843 DSN 732-5584, C830-298-5584.	Sunrise-Sunset daily	183
SR278	81 OSS/OSOA, 1911 J. Ave. Ste. 3, Sheppard AFB, TX 76311 DSN 736-4970, C940-676-4970.	Same as Originating Activity	1 hour after sunrise - 1 hour before sunset	184
SR279	81 OSS/OSOA, 1911 J. Ave. Ste. 3, Sheppard AFB, TX 76311 DSN 736-4970, C940-676-4970.	Same as Originating Activity	1 hour after sunrise - 1 hour before sunset	167
SR280	7 WG, Dyess AFB, TX 79607 DSN 461-2318.	Same as Originating Activity	Continuous	47
SR281	47 OSS/OSOR, 570 2nd Street, Suite 6, Laughlin AFB, TX 78843 DSN 732-5864/5337,	85 FTS/DOS, 570 2nd Street, Laughlin AFB, TX 78843 DSN 732-5121/5429, C830-298-5	Sunrise-Sunset daily	155

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Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
SR282	47 OSS/OSOR, 570 2nd Street, Suite. 6, Laughlin AFB, TX 78843 DSN 732-5864/5337,	85 FTS/DOS, 570 2nd Street, Laughlin AFB, TX 78843 DSN 732-5121/5429, C830-298-5	Sunrise-Sunset daily	155
SR283	47 OSS/OSOR, 570 2nd Street, Suite 6, Laughlin AFB, TX 78843 DSN 732-5864, C830-	85 FTS/DOS, 570 2nd Street., Laughlin AFB, TX 78843 DSN 732-5121/5429, C830-298-	Sunrise-Sunset daily	133
SR284	47 OSS/OSOR, 570 2nd Street., Suite. 6, Laughlin AFB, TX 78843 DSN 732-5864, C83	85 FTS/DOS, 570 2nd Street., Laughlin AFB, TX 78843 DSN 732-5121/5429, C830-298-	Sunrise-Sunset daily	133
SR286	12 OSS/OSOA, Randolph AFB, TX 78150-5000 DSN 487-5580, C210-652-5580.	559 FTS, Randolph AFB, TX 78150 DSN 487-5661, C210-652-5661.	Sunrise-Sunset Daily	111
SR287	12 OSS/OSOA, Randolph AFB, TX 78150-5000 DSN 487-5580, C210-652-5580.	559 FTS, Randolph AFB, TX 78150 DSN 487-5661, C210-652-5661.	Sunrise-Sunset Daily, except holidays	117
SR290	12 OSS/OSOA, Randolph AFB, TX 78150-5000 DSN 487-5580, C210-652-5580.	559 FTS, Randolph AFB, TX 78150 DSN 487-5661, C210-652-5661.	Sunrise-Sunset Daily, except holidays	120
SR292	12 OSS/OSOA, Randolph AFB, TX 78150-5000 DSN 487-5580, C210-652-5580.	559 FTS, Randolph AFB, TX 78150 DSN 487-5661, C210-652-5661.	Sunrise-Sunset daily except holidays	114
SR294	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850 C580-213-7850.	8 FTS/DOO, Vance AFB, OK 73705-5202 DSN 448-6037 C580-213-6037.	Sunrise-Sunset	198
SR295	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850 C580-213-7850.	8 FTS/DOO, Vance AFB, OK 73705-5202 DSN 448-6037 C580-213-6037.	Sunrise-Sunset	194
SR296	71 FTW/OSOP, Vance AFB, OK 73705-5202 DSN 448-7850 C580-213-7850.	8 FTS/DOO, Vance AFB, OK 73705-5202 DSN 448-6037 C580-213-6037.	Sunrise-Sunset	179
SR300	60 OSS/OSO, 611 E. St., Travis AFB, CA 94535 DSN 837-1075, C707-424-1075.	60 OSS/OSO, 611 E. St., Travis AFB, CA 94535 DSN 837-5582, C707-424-5582.	Continuous	762
SR301	60 OSS/OSO, 611 E. St., Travis AFB, CA 94535 DSN 837-1075, C707-424-1075.	60 OSS/OSO, 611 E. St., Travis AFB, CA 94535 DSN 837-5582, C707-424-5582.	Continuous	763
SR311	129 RQW/DOW, PO Box 103, Stop 14, Moffett Federal Afld, CA 94035-5000 DSN 359-93	Same as Originating Activity	Continuous	145
SR353	129 RQW/DOW, PO Box 103, Stop 14, Moffett Federal Afld, CA 94035-5000 DSN 359-93	Same as Originating Activity	Continuous	110
SR359	129 RQW/DOW, PO Box 103, Stop 14, Moffett Federal Afld, CA 94035-5000 DSN 359-93	Same as Originating Activity	Continuous	145
SR381	129 RQW/DOW, PO Box 103, Stop 14, Moffett Federal Afld, CA 94035-5000 DSN 359-93	Same as Originating Activity	Continuous	142
SR390	146 AW/DOXT (ANG), 106 Mulcahey Dr., Port Hueneme, CA 93041-4003 DSN 893-7590/75	Same as Originating Activity	Continuous	97
SR397	146 AW/DOXT (ANG), 106 Mulcahey Dr., Port Hueneme, CA 93041-4003 DSN 893-7590/75	Same as Originating Activity	Continuous	114
SR398	129 RQW/DOW, PO Box 103, Stop 14, Moffett Federal Afld, CA 94035-5000 DSN 359-93	Same as Originating Activity	Continuous	43
SR616	139 Airlift Wg., 705 Memorial Drive, St. Joseph, MO 64503-9307 DSN 356-3225/3470	Same as Originating Activity	1300-0500Z++ daily	148
SR617	139 Airlift Wg., 705 Memorial Drive, St. Joseph, MO 64503-9307 DSN 356-3225/3470	Same as Originating Activity	1300-0500Z++ daily	147
SR618	139 Airlift Wg., 705 Memorial Drive, St. Joseph, MO 64503-9307 DSN 356-3225/3470	Same as Originating Activity	1300-0500Z++ daily	129

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
SR619	139 Airlift Wg., 705 Memorial Drive, St. Joseph, MO 64503-9307 DSN 356-3225/3470	Same as Originating Activity	1300-0500Z++ daily	137
SR701	191 AG, Selfridge ANGB, MI 48045 DSN 273-4498/4441, C810-463-3664.	Same as Originating Activity	1600-0400Z++ Tue-Sat, 1600-2200Z++ Sun	177
SR702	191 AG, Selfridge ANGB, MI 48045 DSN 273-4498/4441, C810-463-3664.	Same as Originating Activity	1600-0400Z++ Tue-Sat, 1600-2200Z++ Sun	166
SR703	191 AG, Selfridge ANGB, MI 48045 DSN 273-4498/4441, C810-463-3664.	Same as Originating Activity	1600-0400Z++ Tue-Sat, 1600-2200Z++ Sun	75
SR707	179 AW, Mansfield Lahm Airport, OH 44903-0179 DSN 696-6165.	Same as Originating Activity	0700-2300 local daily	142
SR708	179 AW, Mansfield Lahm Airport, OH 44903-0179 DSN 696-6165.	Same as Originating Activity	0700-2300 local daily	164
SR709	179 AW, Mansfield Lahm Airport, OH 44903-0179 DSN 696-6165.	Same as Originating Activity	0700-2300 local daily	105
SR710	179 AW, Mansfield Lahm Airport, OH 44903-0179 DSN 696-6165.	Same as Originating Activity	0700-2300 local daily	110
SR711	179 AW, Mansfield Lahm Airport, OH 44903-0179 DSN 696-6165.	Same as Originating Activity	0700-2300 local daily	115
SR712	179 AW, Mansfield Lahm Airport, OH 44903-0179 DSN 696-6165.	Same as Originating Activity	0700-2300 local daily	140
SR713	179 AW, Mansfield Lahm Airport, OH 44903-0179 DSN 696-6165.	Same as Originating Activity	0700-2300 local daily	117
SR714	179 AW, Mansfield Lahm Airport, OH 44903-0179 DSN 696-6165.	Same as Originating Activity	0700-2300 local daily	88
SR715	179 AW, Mansfield Lahm Airport, OH 44903-0179 DSN 696-6165.	Same as Originating Activity	0700-2300 local daily	148
SR727	133AW, Minneapolis-St. Paul Intl, MN 55111, DSN 783-2488, C612-713-2488.	Same as Originating Activity	IAW 133AW lcl sched, ctc 109AS/DOK DSN 783-2488 or 109AS/DOS DSN 783-2459	200
SR728	133AW, Minneapolis-St. Paul Intl, MN 55111, DSN 783-2488, C612-713-2488.	Same as Originating Activity	IAW 133AW lcl sched, ctc 109AS/DOK DSN 783-2488 or 109AS/DOS DSN 783-2459	179
SR729	133AW, Minneapolis-St. Paul Intl, MN 55111, DSN 783-2488, C612-713-2488.	Same as Originating Activity	IAW 133AW lcl sched, ctc 109AS/DOK DSN 783-2488 or 109AS/DOS DSN 783-2459	142
SR730	133AW, Minneapolis-St. Paul Intl, MN 55111, DSN 783-2488, C612-713-2488.	Same as Originating Activity	IAW 133AW lcl sched, ctc 109AS/DOK DSN 783-2488 or 109AS/DOS DSN 783-2459	136
SR731	133AW, Minneapolis-St. Paul Intl, MN 55111, DSN 783-2488, C612-713-2488.	Same as Originating Activity	IAW 133AW lcl sched, ctc 109AS/DOK DSN 783-2488 or 109AS/DOS DSN 783-2459	88
SR771	440 AW/DOO, General Mitchell IAP, Milwaukee, WI 53207, DSN 741-5155/5157, FAX DS	Same as Originating Activity	2200-0330Z++ Tue-Fri; 1500-2200Z++ Sat-Sun	255
SR776	440 AW/DOO, General Mitchell IAP, Milwaukee, WI 53207, DSN 741-5155/5157, FAX DS	Same as Originating Activity	2000-0400Z++ Tue-Fri; 1600-2200Z++ Sat-Sun	159

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Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
SR781	Alpena CRTC/OTM (ANG), 5884 A Street, Alpena MI 49707-8125 DSN 741-3509/3226 C80	Same as Originating Activity	0700-2300 local daily	118
SR782	Alpena CRTC/OTM (ANG), 5884 A Street, Alpena MI 49707-8125 DSN 741-3509/3226 C80	Same as Originating Activity	0700-2300 local daily	152
SR785	440 AW/DOO, General Mitchell IAP, Milwaukee, WI 53207, DSN 741-5155/5157, FAX DS	Same as Originating Activity	2000-0400Z++ Tue-Fri; 1600-2200Z++ Sat-Sun	141
SR800	166 OSF/OSK, 2805 Spruance Drive, New Castle 19720-1615 DSN 445-7554 C302-323-35	Same as Originating Activity	0800-2300 local	156
SR801	166 OSF/OSK, 2805 Spruance Drive, New Castle 19720-1615 DSN 445-7554 C302-323-35	Same as Originating Activity	0800-2300 local	208
SR802	167 AW, Eastern West Virginia Regional, Martinsburg, WV 25401 DSN 242-5250.	Same as Originating Activity	Continuous	81
SR803	167 AW, Eastern West Virginia Regional, Martinsburg, WV 25401 DSN 242-5250.	Same as Originating Activity	Continuous	87
SR804	167 AW, Eastern West Virginia Regional, Martinsburg, WV 25401 DSN 242-5250.	Same as Originating Activity	Continuous	95
SR805	166 OSF/OSK, 2805 Spruance Drive, New Castle 19720-1615 DSN 445-7554 C302-323-35	Same as Originating Activity	0800-2300 local	156
SR806	167 AW, Eastern West Virginia Regional, Martinsburg, WV 25401 DSN 242-5250.	Same as Originating Activity	Continuous	122
SR807	167 AW, Eastern West Virginia Regional, Martinsburg, WV 25401 DSN 242-5250.	Same as Originating Activity	Continuous	141
SR808	167 AW, Eastern West Virginia Regional, Martinsburg, WV 25401 DSN 242-5250.	Same as Originating Activity	Continuous	171
SR809	CHSCW Atlantic, 610 A Street, Suite 150, Norfolk, VA 23511-4222.	FACSFAC VACAPES, 601 Ocean Blvd. Virginia Beach, VA 23460	Continuous	125
SR810	CHSCW Atlantic, 610 A Street, Suite 150, Norfolk, VA 23511-4222.	FACSFAC VACAPES, 601 Ocean Blvd. Virginia Beach, VA 23460	Continuous	144
SR811	CHSCW Atlantic, 610 A Street, Suite 150, Norfolk, VA 23511-4222.	FACSFAC VACAPES, 601 Ocean Blvd. Virginia Beach, VA 23460	Continuous	106
SR812	CHSCW Atlantic, 610 A Street, Suite 150, Norfolk, VA 23511-4222.	FACSFAC VACAPES, 601 Ocean Blvd. Virginia Beach, VA 23460	Continuous	106
SR820	166 OSF/OSK, 2805 Spruance Drive, New Castle 19720-1615 DSN 445-7554 C302-323-35	Same as Originating Activity	0900-2300 local daily	141
SR821	166 OSF/OSK, 2805 Spruance Drive, New Castle 19720-1615 DSN 445-7554 C302-323-35	Same as Originating Activity	0900-2300 local daily	129
SR822	911 AW, Pittsburgh Intl, PA DSN 277-8722/8761.	Same as Originating Activity	1000-0300Z Mon-Sat	125
SR823	914 OSF/OSK, 10460 Wagner Dr, Niagra Falls ARS, NY 14304-5010, DSN 238-3233.	Same as Originating Activity	1300-0300Z++	183
SR825	914 OSF/OSK, 10460 Wagner Dr, Niagra Falls ARS, NY 14304-5010, DSN 238-3233.	Same as Originating Activity	1300-0300Z++	181
SR835	166 OSF/OSK, 2805 Spruance Drive, New Castle 19720-1615 DSN 445-7554 C302-323-35	Same as Originating Activity	0900-2300 local	132
SR844	166 Airlift Gp, 166 OSF/DOW, 2600 Spruance Dr, Corporate Commons, New Castle, DE	Same as Originating Activity	0800-2359 local	153
SR845	166 Airlift Gp, 166 OSF/DOW, 2600 Spruance Dr, Corporate Commons, New Castle, DE	Same as Originating Activity	0800-2359 local	200
SR846	166 Airlift Gp, 166 OSF/DOW, 2600 Spruance Dr, Corporate Commons, New Castle, DE	Same as Originating Activity	0800-2359 local	111
SR847	166 Airlift Gp, 166 OSF/DOW, 2600 Spruance Dr, Corporate Commons, New Castle, DE	Same as Originating Activity	0800-2359 local	67
SR867	Commander, Ft Pickett, VA 23824-5000 DSN 438-8506, C804-292-8506.	Same as Originating Activity	Continuous	196

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
SR871	130 AG (ANG), Kanawha County, Charleston, WV 25311 DSN 366-6291.	Same as Originating Activity	0800-2300 local	150
SR872	130 AG (ANG), Kanawha County, Charleston, WV 25311 DSN 366-6291.	Same as Originating Activity	0800-2300 Local	156
SR873	130 AG (ANG), Kanawha County, Charleston, WV 25311 DSN 366-6291.	Same as Originating Activity	0800-2300 local	155
SR874	130 AG (ANG), Kanawha County, Charleston, WV 25311 DSN 366-6291.	Same as Originating Activity	0800-2300 local	130
SR900	143 AW/Operations, 7 Flightline Dr, North Kingstown, RI 02852-7548 DSN 476-3405,	Same as Originating Activity	1200-0400Z++ Daily	153
SR901	143 AW/Operations, 7 Flightline Dr, North Kingstown, RI 02852-7548 DSN 476-3405,	Same as Originating Activity	1200-0400Z++ Daily	98
SR902	143 AW/Operations, 7 Flightline Dr, North Kingstown, RI 02852-7548 DSN 476-3405,	Same as Originating Activity	1200-0400Z++ Daily	160
SR904	143 AW/Operations, 7 Flightline Dr, North Kingstown, RI 02852-7548 DSN 476-3405,	Same as Originating Activity	1000-2200 local	184
SR905	143 AW/Operations, 7 Flightline Dr, North Kingstown, RI 02852-7548 DSN 476-3405,	Same as Originating Activity	1000-2200 local	97
VR025	GA ANG/CRTC/OTR Townsend Range P.O. BOX 220, GA 31331 DSN 860-3303 C912-963-3303	GA ANG/CRTC/OTR Townsend Range P.O. BOX 220, GA 31331 DSN 860-3007 C912-963-3007	0700-2200 LCL, other times by NOTAM	55
VR041	4 OSS/OSOR, Seymour Johnson AFB, NC 27531-5004 DSN 722-2672, C919-722-2672.	4 OSS/OSOS, Seymour Johnson AFB, NC 27531-5004 DSN 722-2129/2124, C919-722-2129/	Continuous	424
VR042	4 OSS/OSOR, Seymour Johnson AFB, NC 27531-5004 DSN 722-2672, C919-722-2672.	4 OSS/OSOS, Seymour Johnson AFB, NC 27531-5004 DSN 722-2129/2124, C919-722-2129/	Continuous	503
VR043	4 OSS/OSOR, Seymour Johnson AFB, NC 27531-5004 DSN 722-2672, C919-722-2672.	4 OSS/OSOS, Seymour Johnson AFB, NC 27531-5004 DSN 722-2129/2124, C919-722-2129/	Continuous	369
VR045	GA ANG/CRTC/OTR Townsend Range, P.O.BOX 220, Townsend, GA 31331, DSN 860-3007 C9	GA ANG/CRTC/OTR Townsend Range, P.O.BOX 220, Townsend, GA 31331, DSN 860-3303 C9	0700-2200 LCL, Mon-Fri, other time by NOTAM	55
VR054	4 OSS/OSOR, Seymour Johnson AFB, NC 27531-5004 DSN 722-2672, C919-722-2672.	4 OSS/OSOS, Seymour Johnson AFB, NC 27531-5004 DSN 722-2129/2124, C919-722-2129/	0700-2100 local Mon-Fri, OT by NOTAM	34
VR058	20 OSS/OSTA, Shaw AFB, SC 29152 DSN 965-1121/1122, C803-895-1121/1122, Fax DSN 9	20 OSS/OSOS, Shaw AFB, SC 29152 DSN 965-1118/1119, C803-895-1118/1119. Non-duty	Continuous (Jan, Mar, May, Jul, Sep, Nov) VR-092 reverse direction other months	199
VR060	187 FW, 5187 Selma Highway , Montgomery, AL 36108-4824 DSN 358-9255, C334-394-72	Same as Originating Activity	0700-1700 Local or by NOTAM	123
VR071	4 OSS/OSOR, Seymour Johnson AFB, NC 27531-5004 DSN 722-2672, C919-722-2672.	4 OSS/OSOS, Seymour Johnson AFB, NC 27531-5004 DSN 722-2129/2124, C919-722-2129/	0700-2100 local Mon-Fri, OT by NOTAM	29
VR073	4 OSS/OSOR, Seymour Johnson AFB, NC 27531-5004 DSN 722-2672, C919-722-2672.	4 OSS/OSOS, Seymour Johnson AFB, NC 27531-5004 DSN 722-2129/2124, C919-722-2129/	Continuous	222
VR083	4 OSS/OSOR, Seymour Johnson AFB, NC 27531-5004 DSN 722-2672, C919-722-2672	4 OSS/OSOS, Seymour Johnson AFB, NC 27531-5004 DSN 722-2129/2124, C919-722-2129/	Continuous	238
VR084	4 OSS/OSOR, Seymour Johnson AFB, NC 27531-5004 DSN 722-2672, C919-722-2672.	4 OSS/OSOS, Seymour Johnson AFB, NC 27531-5004 DSN 722-2129/2124, C919-722-2129/	Continuous	204
VR085	4 OSS/OSOR, Seymour Johnson AFB, NC 27531-5004 DSN 722-2672, C919-722-2672.	4 OSS/OSOS, Seymour Johnson AFB, NC 27531-5004 DSN 722-2129/2124, C919-722-2129/	Continuous	168

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
VR086	4 OSS/OSOR, Seymour Johnson AFB, NC 27531-5004 DSN 722-2672, C919-722-2672.	4 OSS/OSOS, Seymour Johnson AFB, NC 27531-5004 DSN 722-2129/2124, C919-722-2129/	Continuous	203
VR087	20 OSS/OSTA, Shaw AFB, SC 29152 DSN 965-1121/1122, C803-895-1121/1122, Fax DSN 9	20 OSS/OSOS, Shaw AFB, SC 29152 Duty hrs DSN 965-1118/1119, C803-895-1118/1119.	Continuous	185
VR088	20 OSS/OSTA, Shaw AFB, SC 29152 DSN 965-1121/1122, C803-895-1121/1122, Fax DSN 9	20 OSS/OSOS, Shaw AFB, SC 29152 Duty hrs DSN 965-1118/1119, C803-895-1118/1119.	Continuous	164
VR092	20 OSS/OSTA, Shaw AFB, SC 29152 DSN 965-1121/1122, C803-895-1121/1122, Fax DSN 9	20 OSS/OSOS, Shaw AFB, SC 29152 Duty hrs DSN 965-1118/1119, C803-895-1118/1119.	Continuous (Feb, Apr, Jun, Aug, Oct, Dec) VR-058 opposite direction other months	199
VR093	20 OSS/OSTA, Shaw AFB, SC 29152 DSN 965-1121/1122, C803-895-1121/1122, Fax DSN 9	20 OSS/OSOS, Shaw AFB, SC 29152 Duty hrs DSN 965-1118/1119, C803-895-1118/1119.	Continuous	210
VR096	4 OSS/OSOR, Seymour Johnson AFB, NC 27531-5004 DSN 722-2672, C919-722-2672.	4 OSS/OSOS, Seymour Johnson AFB, NC 27531-5004 DSN 722-2129/2124, C919-722-2129/	Continuous	145
VR097	20 OSS/OSTA, Shaw AFB, SC 29152 DSN 965-1121/1122, C803-895-1121/1122, Fax DSN 9	20 OSS/OSOS, Shaw AFB, SC 29152, Duty hrs DSN 965-1118/1119, C803-895-1118/1119.	0600-2400 local daily	341
VR100	27 SOSS/OSOA, 511 N. Torch Blvd, Building 300, Cannon AFB, NM 88103 DSN 681-2521	27 SOSS/OSOS, 511 N. Torch Blvd, Building 300, Cannon AFB, NM 88103 DSN 681-2276	Continuous	318
VR1001	FACSFACJAX, P.O. Box 40, NAS Jacksonville, FL 32212-0040 DSN 942-2004/2005, C904	Same as Originating Activity	Continuous	389
VR1002	FACSFACJAX, NAS Jacksonville, FL 32212 DSN 942-2004/2005, C904-542-2004/2005.	Same as Originating Activity	Continuous	434
VR1003	FACSFACJAX, NAS Jacksonville, FL 32212 DSN 942-2004/2005, C904-542-2004/2005.	Same as Originating Activity	Continuous	488
VR1004	FACSFACJAX, P.O. Box 40, NAS Jacksonville, FL 32212-0040 DSN 942-2004/2005, C904	Same as Originating Activity	Continuous	569
VR1005	FACSFACJAX, P.O. Box 40, NAS Jacksonville, FL 32212-0040 DSN 942-2004/2005, C904	Same as Originating Activity	Continuous	280
VR1006	FACSFACJAX, NAS Jacksonville, FL 32212 DSN 942-2004/2005, C904-542-2004/2005.	Same as Originating Activity	Continuous	682
VR1007	FACSFACJAX, P.O. Box 40, NAS Jacksonville, FL 32212-0040 DSN 942-2004/2005, C904	Same as Originating Activity	Continuous	173
VR1008	FACSFACJAX, P.O. Box 40, NAS Jacksonville, FL 32212-0040 DSN 942-2004/2005, C904	Same as Originating Activity	Continuous	74
VR1009	FACSFACJAX, P.O. Box 40, NAS Jacksonville, FL 32212-0040 DSN 942-2004/2005, C904	Same as Originating Activity	Continuous	76
VR101	301 OG/SUA, NAS JRB, Fort Worth, TX 76127 DSN 739-6903/04/05, C817-782-6903/04/0	Same as Originating Activity	0700-2200 local, OT by NOTAM	72
VR1010	FACSFACJAX, P.O. Box 40, NAS Jacksonville, FL 32212-0040 DSN 942-2004/2005, C904	Same as Originating Activity	Continuous	26
VR1013	FACSFACJAX, P.O. Box 40, NAS Jacksonville, FL 32212-0040 DSN 942-2004/2005, C904	Same as Originating Activity	Continuous	62
VR1014	14 OSS/OSOP, Columbus AFB, MS 39710-5000 DSN 742-7560/7633, C662-434-7560/7633.	37/41 FTS, Columbus AFB, MS 39710-5000 DSN 742-7666/7667, C662-434-7666/7667.	Sunrise-Sunset daily	177
VR1016	14 OSS/OSOP Columbus AFB, MS 39710 DSN 742-7560/7633 C662-434-7560/7633	48 FTS Columbus AFB, MS 39710 DSN 742-7840/7847 C662-434-7840/7847	Sunrise-Sunset daily	395
VR1017	187 FW, 5187 Selma Highway, Montgomery, AL 36108-4824 DSN 358-9255, C334-394-725	Same as Originating Activity	0700-1730 local, OT by NOTAM	175

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
VR1020	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ weekdays, occasional weekends	147
VR1021	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ weekdays, occasional weekends	418
VR1022	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ weekdays, occasional weekends	173
VR1023	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ weekdays, occasional weekends	300
VR1024	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0400Z++ weekdays, occasional weekends	297
VR1030	COMTRAWING ONE, NAS MERIDIAN, MS 39309-0136 DSN 637-2487, C601-679-2487.	Same as Originating Activity	1100-0600Z++ daily	255
VR1031	COMTRAWING ONE, NAS MERIDIAN, MS 39309-0136 DSN 637-2487, C601-679-2487.	Same as Originating Activity	1100-0600Z++ daily	341
VR1032	COMTRAWING ONE, NAS MERIDIAN, MS 39309 DSN 637-2854, C601-679-2854.	Same as Originating Activity	1100-0600Z++ daily	211
VR1033	COMTRAWING ONE, NAS MERIDIAN, MS 39309 DSN 637-2854, C601-679-2854.	Same as Originating Activity	1100-0600Z++ daily	322
VR1039	FACSFACJAX, P.O. Box 40, NAS Jacksonville, FL 32212-0040 DSN 942-2004/2005, C904	Same as Originating Activity	Continuous	8
VR104	301 OG/SUA, NAS JRB, Fort Worth, TX 76127 DSN 739-6903/04/05, C817-782-6903/04/0	Same as Originating Activity	0700-2200 local, OT by NOTAM	220
VR1040	Originating Activity: CO MCAS CHERRY POINT, ATTN DIROPS/RMD, Cherry Point, NC 28533 DSN 582-4025, C252-466-4025. Scheduling Activity: Central Scheduling Office, MCAS Cherry Point, NC 28533 DSN 582-4040/4041, C252-466-4040/4041.	Central Scheduling Division MCAS Cherry Point, NC 28533 DSN 582-4040/4041, C252-	Continuous	420
VR1041	Originating Activity: CO MCAS CHERRY POINT, ATTN DIROPS/RMD, Cherry Point, NC 28533 DSN 582-4025, C252-466-4025. Scheduling Activity: Central Scheduling Office, MCAS Cherry Point, NC 28533 DSN 582-4040/4041, C252-466-4040/4041.	Central Scheduling Division MCAS Cherry Point, NC 28533 DSN 582-4040/4041, C252-	Continuous	383
VR1043	Originating Activity: CO MCAS CHERRY POINT, ATTN DIROPS/RMD, Cherry Point, NC 28533 DSN 582-4025, C252-466-4025. Scheduling Activity: Central Scheduling Office, MCAS Cherry Point, NC 28533 DSN 582-4040/4041, C252-466-4040/4041.	Central Scheduling Division MCAS Cherry Point, NC 28533 DSN 582-4040/4041, C252-	0700-2300 Local Daily	455
VR1046	Originating Activity: CO MCAS CHERRY POINT, ATTN DIROPS/RMD, Cherry Point, NC 28533 DSN 582-4025, C252-466-4025. Scheduling Activity: Central Scheduling Office, MCAS Cherry Point, NC 28533 DSN 582-4040/4041, C252-466-4040/4041.	Central Scheduling Division MCAS Cherry Point, NC 28533 DSN 582-4040/4041, C252-	0600-1800 Local Mon-Fri	243
VR1050	14 OSS/OSOP, Columbus AFB, MS 39710-5000 DSN 742-7560/7633, C662-434-7560/7633.	48 FTS, Columbus AFB, MS 39710-5000 DSN 742-7840/7847, C662-434-7840/7847.	0700-2300 local daily	359
VR1051	14 OSS/OSOP, Columbus AFB, MS 39710-5000 DSN 742-7560/7633, C662-434-7560/7633.	48 FTS, Columbus AFB, MS 39710-5000 DSN 742-7840/7847, C662-434-7840/7847.	0700-2300 local daily	440
VR1052	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0500Z++	358
VR1054	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1300-0500Z++ daily	293
VR1055	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1300-0500Z++ 7 days a week	299

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
VR1056	FACSFAC, Pensacola, FL 32508-5217 DSN 922-2735, C850-452-2735.	Same as Originating Activity	1200-0500Z++	358
VR1059	20 OSS/OSTA, Shaw AFB, SC 29152 DSN 965-1121/1122, C803-895-1121/1122, Fax DSN 9	20 OSS/OSOS, Shaw AFB, SC 29152 Duty hrs DSN 965-1118/1119, C803-895-1118/1119.	Continuous	328
VR106	97 OSS/DOA, 400 N Sixth St., Altus AFB, OK 73521 DSN 866-6098, C580-481-6098.	97 OSS/OSK, 400 N Sixth St. Suite 12, Altus AFB, OK 73521 DSN 866-7110.	0830-0230 local Mon-Fri	142
VR1061	4 OSS/OSOR, Seymour Johnson AFB, NC 27531-5004 DSN 722-2672, C919-722-2672.	4 OSS/OSOS, Seymour Johnson AFB, NC 27531-5004 DSN 722-2129/2124, C919-722-2129/	Continuous	150
VR1065	347 OSS/OSOS, Moody AFB, GA 31699-1899 DSN 460-4544/3531, C229-257-4544/3531.	23 OSS/OSOS, Moody AFB, GA 31699-1899 DSN 460-7831/7839 C229-257-7831/7839. Mon-	0700-2400L daily	163
VR1066	347 OSS/OSKA, Moody AFB, GA 31699-1899 DSN 460-4131, C229-257-4131.	23 OSS/OSOS, Moody AFB, GA 31699-1899 DSN 460-7831/7839, C229-257-7831/7839. Mon	0700-0000 local daily	207
VR1070	187 FW, 5187 Selma Highway, Montgomery, AL 36108-4824 DSN 358-9255 C334-394-7255	Same as Originating Activity	0700-2000 local, OT by NOTAM	99
VR1072	14 OSS/OSOP, Columbus AFB, MS 39710-5000 DSN 742-7560/7633, C662-434-7560/7633.	48 FTS, Columbus AFB, MS 39710-5000 DSN 742-7840/7847, C662-434-7840/7847.	Normally SR-2100 local, use OT not prohibited	240
VR1076	56 AW (PRANG) Muniz ANGB, 200 Jose A. (Tony) Santana Ave., Carolina, Puerto Rico 00979-1502 DSN 740-9629, C787-253-7629	Same as Originating Activity	1100-0000Z++ (DAILY)	128
VR1077	57 AW (PRANG) Muniz ANGB, 200 Jose A. (Tony) Santana Ave., Carolina, Puerto Rico 00979-1502 DSN 740-9629, C787-253-7629	Same as Originating Activity	1100-0000Z++ (DAILY)	221
VR1078	58 AW (PRANG) Muniz ANGB, 200 Jose A. (Tony) Santana Ave., Carolina, Puerto Rico 00979-1502 DSN 740-9629, C787-253-7629	Same as Originating Activity	1100-0000Z++ (DAILY)	274
VR1079	59 AW (PRANG) Muniz ANGB, 200 Jose A. (Tony) Santana Ave., Carolina, Puerto Rico 00979-1502 DSN 740-9629, C787-253-7629	Same as Originating Activity	1100-0000Z++ (DAILY)	229
VR108	27 SOSS/OSOA, 511 N. Torch Blvd, Building 300, Cannon AFB, NM 88103 DSN 681-2521	27 SOSS/OSOS, 511 N. Torch Blvd, Building 300, Cannon AFB, NM 88103 DSN 681-2276	Continuous	236
VR1080	59 AW (PRANG) Muniz ANGB, 200 Jose A. (Tony) Santana Ave., Carolina, Puerto Rico 00979-1502 DSN 740-9629, C787-253-7629	Same as Originating Activity	1100-0000Z++ (DAILY)	128
VR1081	59 AW (PRANG) Muniz ANGB, 200 Jose A. (Tony) Santana Ave., Carolina, Puerto Rico 00979-1502 DSN 740-9629, C787-253-7629	Same as Originating Activity	1100-0000Z++ (DAILY)	196
VR1082	46 OSS/OSX, 505 North Barrancas Ave, Suite 302, Eglin AFB, FL 32542-6818 DSN 872	46 OSS/OSOS (ROCC), 505 North Barrancas Ave, Suite 201, Eglin AFB, FL 32542-6818	Normally 1200-2300Z++ Mon-Fri, available OT	189
VR1083	USAFAWC-79 Test and Evaluation Group/CD, Eglin AFB, FL 32542 DSN 872-2024, C904-	85 Test and Evaluation Squadron/DOOS, Eglin AFB, FL 32542 DSN 872-2622, C904-882	Normally 1200-2300Z++ Mon-Fri, route usage is allowable OT	209
VR1084	USAFAWC-79 Test and Evaluation Group/CD, Eglin AFB, FL 32542 DSN 872-2024, C904-	85 Test and Evaluation Squadron/DOOS, Eglin AFB, FL 32542 DSN 872-2622, C904-882	Normally 1200-2300Z++ Mon-Fri, route usage is allowable OT	101
VR1085	46 OSS/OSX, 505 North Barrancas Ave, Suite 302, Eglin AFB, FL 32542-6818 DSN 872	46 OSS/OSOS (ROCC), 505 North Barrancas Ave, Suite 201, Eglin AFB, FL 32542-6818	Normally 1200-2300Z++ Mon-Fri, route usage is allowable OT	287

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
VR1087	347 Rescue Wing, Detachment 1/RO, 8707 North Golf Course St., MacDill AFB, FL 33	347 Rescue Wing, Detachment 1/ROA, 8707 North Golf Course St., MacDill AFB, FL 3	Normally 0900-2400Z++ daily, available OT	90
VR1088	347 Rescue Wing, Detachment 1/RO, 8707 North Golf Course St., MacDill AFB, FL 33	347 Rescue Wing, Detachment 1/ROA, 8707 North Golf Course St., MacDill AFB, FL 3	Normally 0900-2400Z++ daily, available OT	83
VR1089	347 Rescue Wing, Detachment 1/RO, 8707 North Golf Course St., MacDill AFB, FL 33	347 Rescue Wing, Detachment 1/ROA, 8707 North Golf Course St., MacDill AFB, FL 3	Normally 0900-2400Z++ daily, available OT	107
VR1097	347 WG, Detachment 1/RO, 8707 North Golf Course St., MacDill AFB, FL 33621-5205	347 WG, Detachment 1/ROA, 8707 North Golf Course St., MacDill AFB, FL 33621-5205	Continuous	68
VR1098	347th Rescue WG, Detachment 1/RO, 8707 North Golf Course St., MacDill AFB, FL 33	347th Rescue WG, Detachment 1/ROA, 8707 North Golf Course St., MacDill AFB, FL 3	Continuous	167
VR1102	188FW Arkansas ANG, 4850 Leigh Ave., Fort Smith, AR 72903-6096 DSN 778-5502.	Same as Originating Activity. Route scheduled no more than 72 hr in advance. Min	Continuous	83
VR1103	188FW Arkansas ANG, 4850 Leigh Ave., Fort Smith, AR 72903-6096 DSN 778-5502.	Same as Originating Activity. Route scheduled no more than 72 hr in advance. Min	Continuous	120
VR1104	188FW Arkansas ANG, 4850 Leigh Ave., Fort Smith, AR 72903-6096 DSN 778-5502.	Same as Originating Activity. Route scheduled no more than 72 hr in advance. Min	Continuous	109
VR1105	149 FTR GP (TX-ANG), Kelly AFB, TX 78241 DSN 945-5934, C210-925-5934.	Same as Originating Activity	0800-1830 local daily	93
VR1106	149 FTR GP (TX-ANG), Kelly AFB, TX 78241 DSN 969-5934.	Same as Originating Activity	0800-1830 local daily	93
VR1107	150 FW OG/CC, 2251 Air Guard Rd. SE, Kirtland AFB, NM 87117-5875 DSN 246-7426.	Same as Originating Activity	Sunrise-2200 local daily	243
VR1108	47 OSS/OSOR, 570 2nd St., Suite 6, Laughlin AFB, TX 78843 DSN 732-5864, C830-298	87 FTS/DOS, 570 2nd St., Laughlin AFB, TX 78843 DSN 732-5484, C830-298-5484. Sch	Sunrise-Sunset only	125
VR1109	47 OSS/OSOR, 570 2nd St., Suite. 6, Laughlin AFB, TX 78843 DSN 732-5864, C830-29	87 FTS/DOS, 570 2nd St., Laughlin AFB, TX 78843 DSN 732-5484, C830-298-5484. Sch	Sunrise-Sunset daily	114
VR1110	301 OG/SUA, NAS JRB, Fort Worth, TX 76127 DSN 739-6903/04/05, C817-782-6903/04/0	Same as Originating Activity	0700-2200 local daily, OT by NOTAM	80
VR1113	188FW Arkansas ANG, 4850 Leigh Ave., Fort Smith, AR 72903-6096 DSN 778-5502.	Same as Originating Activity. Route scheduled no more than 72 hr in advance. Min	Continuous	188
VR1116	OC-ALC/10 FLTS, 4805 West Dr, Tinker AFB, OK 73145-3300 DSN 336-7719/7710, C405-	Same as Originating Activity	Daylight hours only	164
VR1117	47 OSS/OSOR, 570 2nd St., Suite. 6, Laughlin AFB, TX 78843 DSN 732-5864, C830-29	87 FTS/DOS, 570 2nd St., Laughlin AFB, TX 78843 DSN 732-5484, C830-298-5484. Sch	Sunrise-Sunset Sat-Sun	114
VR1120	149 FW (TX ANG), 107 Hensley Street, Kelly AFB, TX 78241-5544 DSN 945-5934, C210	Same as Originating Activity	Sunrise-Sunset	128
VR1121	149 FW (TX ANG), 107 Hensley Street, Kelly AFB, TX 78241-5544 DSN 945-5934, C210	Same as Originating Activity	Sunrise-Sunset	128
VR1122	149 FW (TX ANG), 107 Hensley Street, Kelly AFB, TX 78241-5544 DSN 945-5934, C210	Same as Originating Activity	Sunrise-Sunset	193
VR1123	149 FW (TX ANG), 107 Hensley Street, Kelly AFB, TX 78241-5544 DSN 945-5934, C210	Same as Originating Activity	Sunrise-Sunset	193
VR1124	301 OG/SUA, NAS JRB, Fort Worth, TX 76127 DSN 739-6903/04/05, C817-782-6903/04/0	Same as Originating Activity	0700-2200 local daily, OT by NOTAM	57
VR1128	301 OG/SUA, NAS JRB, Fort Worth, TX 76127 DSN 739-6903/04/05, C817-782-6903/04/0	Same as Originating Activity	0700-2200 local daily, OT by NOTAM	206

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
VR1130	188FW Arkansas ANG, 4850 Leigh Ave., Fort Smith, AR 72903-6096 DSN 778-5502.	Same as Originating Activity. Route scheduled no more than 72 hr in advance. Min	Continuous	109
VR1137	301 OG/SUA, NAS JRB, Fort Worth, TX 76127 DSN 739-6903/04/05, C817-782-6903/04/0	Same as Originating Activity	0700-2200 local daily, OT by NOTAM	193
VR1138	80th Flying Training Wing, 1911 J. Ave. Ste 6, Sheppard AFB, TX 76311-2056 DSN 7	90 FTS/DOTOD, Sheppard AFB, TX 76311 DSN 736-2675/4995, C940-676-2675/4995.	Sunrise-Sunset Mon-Fri, OT by NOTAM	193
VR1139	80th Flying Training Wing, 1911 J. Ave. Ste 6, Sheppard AFB, TX 76311-2056 DSN 7	90 FTS/DOTOD, Sheppard AFB,TX 76311 DSN 736-2675/4995, C940-676-2675/4995.	Sunrise-Sunset Mon-Fri, OT by NOTAM	210
VR114	27 SOSS/OSOA, 511 N. Torch Blvd, Building 300, Cannon AFB, NM 88103 DSN 681-2521	27 SOSS/OSOS, 511 N. Torch Blvd, Building 300, Cannon AFB, NM 88103 DSN 681-2276	Continuous	172
VR1140	80th Flying Training Wing, 1911 J. Ave. Ste 6, Sheppard AFB, TX 76311-2056 DSN 7	90 FTS/DOTOD, Sheppard AFB, TX 76311 DSN 736-2675/4995, C940-676-2675/4995.	Sunrise-Sunset Mon-Fri, OT by NOTAM	210
VR1141	80th Flying Training Wing, 1911 J. Ave. Ste 6, Sheppard AFB, TX 76311-2056 DSN 7	90 FTS/DOTOD, Sheppard AFB, TX 76311 DSN 736-2675/4995, C940-676-2675/4995.	Sunrise-Sunset Mon-Fri, OT by NOTAM	217
VR1142	80th Flying Training Wing, 1911 J. Ave. Ste 6, Sheppard AFB, TX 76311-2056 DSN 7	90 FTS/DOTOD, Sheppard AFB, TX 76311 DSN 736-2675/4995, C940-676-2675/4995.	Sunrise-Sunset Mon-Fri, OT by NOTAM	217
VR1143	80th Flying Training Wing, 1911 J. Ave. Ste 6, Sheppard AFB, TX 76311-2056 DSN 7	90 FTS/DOTOD, Sheppard AFB, TX 76311 DSN 736-2675/4995, C940-676-2675/4995.	Sunrise-Sunset Mon-Fri, OT by NOTAM	248
VR1144	80th Flying Training Wing, 1911 J. Ave. Ste 6, Sheppard AFB, TX 76311-2056 DSN 7	90 FTS/DOTOD, Sheppard AFB, TX 76311 DSN 736-2675/4995, C940-676-2675/4995.	Sunrise-Sunset Mon-Fri, OT by NOTAM	248
VR1145	80th Flying Training Wing, 1911 J. Ave. Ste 6, Sheppard AFB, TX 76311-2056 DSN 7	90 FTS/DOTOD, Sheppard AFB, TX 76311 DSN 736-2675/4995, C940-676-2675/4995.	Sunrise-Sunset Mon-Fri, OT by NOTAM	230
VR1146	80th Flying Training Wing, 1911 J. Ave. Ste 6, Sheppard AFB, TX 76311-2056 DSN 7	90 FTS/DOTOD, Sheppard AFB, TX 76311 DSN 736-2675/4995, C940-676-2675/4995.	Sunrise-Sunset Mon-Fri, OT by NOTAM	230
VR1175	OC-ALC/10 Flight Test Sqdn, 4805 West Dr, Tinker AFB, OK 73145-3300 DSN 336-7719	Same as Originating Activity	Sunrise-Sunset	315
VR1176	OC-ALC/10 Flight Test Sqdn, 4805 West Dr, Tinker AFB, OK 73145-3300 DSN 336-7719	Same as Originating Activity	Sunrise-Sunset	315
VR118	301 OG/SUA, NAS JRB, Fort Worth, TX 76127 DSN 739-6903/04/05, C817-782-6903/04/0	Same as Originating Activity	0700-2200 local, OT by NOTAM	82
VR1182	188FW Arkansas ANG, 4850 Leigh Ave., Fort Smith, AR 72903-6096 DSN 778-5502.	Same as Originating Activity. Route scheduled no more than 72 hr in advance. Min	Continuous	187
VR119	71 OSS/OSOP, 301 Gritz Street, Vance AFB, OK 73705-5202 DSN 448-7850, C580-213-7	32 FTS/DOOT, Vance AFB, OK 73705-5202 DSN 448-6251, C580-213-6251.	Sunrise-Sunset daily	165
VR1195	150 FW OG/CC, 2251 Air Guard Rd. SE, Kirtland AFB, NM 87117-5875 DSN 246-7426.	Same as Originating Activity	Sunrise-2200 local daily	243
VR1196	ANG CRTC-Gulfport/OSA, 4715 Hewes Ave, Gulfport, MS 39507-4324 DSN 363-6027, C22	Same as Originating Activity	Continuous	201
VR1205	COMMANDER AFFTC, 412 OSS/OSAA, 235 E. Flightline Rd., Edwards AFB, CA 93523-6460	COMMANDER AFFTC, 412 OSS/OSR, 300 E. Yeager Blvd., Edwards AFB, CA 93524 DSN 527	Continuous	193

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
VR1206	COMMANDER AFFTC, 412 OSS/OSAA, 235 S. Flightline Rd, Edwards AFB, CA 93523-6460	COMMANDER AFFTC, 412 OSS/OSR, 300 E. Yeager Blvd, Edwards AFB, CA 93524 DSN 527-	Continuous	45
VR1214	COMMANDER AFFTC, 412 OSS/OSAA, 235 S. Flightline Rd, Edwards AFB, CA 93523-6460	COMMANDER AFFTC, 412 OSS/OSR, 300 E. Yeager Blvd, Edwards AFB, CA 93524 DSN 527-	Continuous	224
VR1215	COMMANDER AFFTC, 412 OSS/OSAA, 235 S. Flightline Rd, Edwards AFB, CA 93523-6460	COMMANDER AFFTC, 412 OSS/OSR, 300 E. Yeager Blvd, Edwards AFB, CA 93524 DSN 527-	Sunrise-Sunset daily	118
VR1217	COMMANDER AFFTC, 412 OSS/OSAA, 235 S. Flightline Rd, Edwards AFB ,CA 93523-6460	COMMANDER AFFTC, 412 OSS/OSR, 300 E. Yeager Blvd, Edwards AFB, CA 93524 DSN 527-	Sunrise-Sunset daily	111
VR1218	COMMANDER AFFTC, 412 OSS/OSAA, 235 S. Flightline Rd, Edwards AFB, CA 93523-6460	COMMANDER AFFTC, 412 OSS/OSR, 300 E. Yeager Blvd, Edwards AFB, CA 93524 DSN 527-	Sunrise-Sunset daily	207
VR1233	355 OSS/OSOA, 3895 S. 6th St. Suite 200, Davis-Monthan AFB, AZ 85707 DSN 228-468	355 OSS/OSOSO, Davis-Monthan AFB, AZ 85707 1500-2300Z Mon-Fri, no earlier than o	1300-0530Z	275
VR125	27 SOSS/OSOA, 511 N. Torch Blvd, Building 300, Cannon AFB, NM 88103 DSN 681-2521	27 SOSS/OSOS, 511 N. Torch Blvd, Building 300, Cannon AFB, NM 88103 DSN 681-2276	Continuous	318
VR1250	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	Daylight hours, OT by NOTAM	355
VR1251	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	Daylight hours, OT by NOTAM	518
VR1252	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	Daylight hours, OT by NOTAM	185
VR1253	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	Daylight hours, OT by NOTAM	443
VR1254	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	Daylight hours, OT by NOTAM	246
VR1255	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	Daylight hours, OT by NOTAM	296
VR1256	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	Daylight hours, OT by NOTAM	91
VR1257	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, Rm 121, NAS Le	Same as Originating Activity	Daylight hours, OT by NOTAM	437
VR1259	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	Daylight hours, OT by NOTAM	425
VR1260	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	Daylight hours, OT by NOTAM	293
VR1261	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	Daylight hours, OT by NOTAM	386
VR1262	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	Daylight hours, OT by NOTAM	339
VR1264	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	Daylight hours, OT by NOTAM	150
VR1265	G-3, 3D MAW, MCAS Miramar, San Diego, CA 92145 DSN 267-5157, C858-577-5157. Non-working hours DSN 267-9517/9518, C858-577-9517/9518	Same as Originating Activity	Continuous	406
VR1266	Commanding Officer, Yuma MCAS, Box 99160 Yuma, AZ 85369-9160 DSN 269-2326/2077, C928-269-2326/2077	Same as Originating Activity	0700-1800 local (daylight hours)	158
VR1267	Commanding Officer, Yuma MCAS, Box 99160 Yuma, AZ 85369-9160 DSN 269-2326/2077, C928-269-2326/2077	Same as Originating Activity	0700-1800 local	216
VR1267A	Commanding Officer, Yuma MCAS, Box 99160 Yuma, AZ 85369-9160 DSN 269-2326/2077, C928-269-2326/2077	Same as Originating Activity	0700-1800 local	101

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
VR1268	Commanding Officer, Yuma MCAS, Box 99160 Yuma, AZ 85369-9160 DSN 269-2326/2077, C928-269-2326/2077	Same as Originating Activity	0700-1800 local	371
VR1293	COMMANDER AFFTC, 412 OSS/OSAA, 235 S. Flightline Rd, Edwards AFB, CA 93523-6460	COMMANDER AFFTC, 412 OSS/OSR, 300 E. Yeager Blvd, Edwards AFB, CA 93524 DSN 527-	Continuous	20
VR1300	124 WG/OGAM (ANG), GOWEN Field, 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 42	124 WG/OSS (ANG), GOWEN Field, 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 422	Continuous or by NOTAM	421
VR1301	124 WG/OGAM (ANG), GOWEN Field, 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 42	124 WG/OSS (ANG), GOWEN Field, 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 422	Continuous	319
VR1302	124 WG/OGAM (ANG), 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 422-5310, C208-	124 WG/OSS (ANG), 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 422-5348, C208-4	Continuous	190
VR1303	124 WG/OGAM (ANG), GOWEN Field, 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 42	124 WG/OSS (ANG), GOWEN Field, 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 422	Continuous or by NOTAM	432
VR1304	124 WG/OGAM (ANG), GOWEN Field, 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 42	124 WG/OSS (ANG), GOWEN Field, 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 422	Continuous or by NOTAM	452
VR1305	124 WG/OGAM (ANG), GOWEN Field, 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 42	124 WG/OSS (ANG), GOWEN Field, 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 422	Continuous or by NOTAM	452
VR1350	Commanding Officer (N38), NAS Whidbey Island, 3730 N. Charles Porter Ave, Oak Ha	Same as Originating Activity	Continuous	261
VR1351	Commanding Officer (N38), NAS Whidbey Island, 3730 N. Charles Porter Ave, Oak Ha	Same as Originating Activity	Continuous	373
VR1352	Commanding Officer (N38), NAS Whidbey Island, 3730 N. Charles Porter Ave, Oak Ha	Same as Originating Activity	Continuous	315
VR1353	Commanding Officer (N38), NAS Whidbey Island, 3730 N. Charles Porter Ave, Oak Ha	Same as Originating Activity	Continuous	315
VR1354	Commanding Officer (N38), NAS Whidbey Island, 3730 N. Charles Porter Ave, Oak Ha	Same as Originating Activity	Continuous	129
VR1355	Commanding Officer (N38), NAS Whidbey Island, 3730 N. Charles Porter Ave, Oak Ha	Same as Originating Activity	Continuous	222
VR138	DET 1, 184 IW, Smokey Hill Ang Range, 84 W Farrelly Rd, Salina, KS 67401-9407. P	Same as Originating Activity	Continuous	190
VR140	12 OSS/OSOA, 501 I Street East, Randolph AFB, TX 78150-4333 DSN 487-5580, C210-6	560 FTS, 1450 5th Street East, Randolph AFB, TX 78150, DSN 487-3518, C210-652-35	Sunrise-Sunset, daily	241
VR142	12 OSS/OSOA, 501 I Street East, Randolph AFB, TX 78150-4333 DSN 487-5580, C210-6	99 FTS, 1450 5th Street East, Randolph AFB, TX 78150-5000 DSN 487-6746, C210-652	Sunrise-Sunset, daily	177
VR1422	388 RANS/RST, 6606 Cedar Lane, Hill AFB, UT 84056-5812, DSN 777-4401, C801-777-4	Same as Originating Activity.	0700-2400 lcl Mon-Thurs, 0700-1800 lcl Fri, 0800-1700 lcl Sat	152
VR1423	388 RANS/RST, 6606 Cedar Lane, Hill AFB, UT 84056-5812, DSN 777-4401, C801-777-4	Same as Originating Activity.	0700-2400 lcl Mon-Thurs, 0700-1800 lcl Fri, 0800-1700 lcl Sat	90
VR1427	140th Wing /DOT, Buckley ANGB, Aurora, CO 80011-9546 DSN 847-9466, C303-340-9470	140th Wing /DOT, Buckley ANGB, Aurora, CO 80011-9546 DSN 847-9472, C720-847-9472	0800-1600 local Tue-Sat, OT by NOTAM	196
VR143	301 OG/SUA, NAS JRB, Fort Worth, TX 76127 DSN 739-6903/04/05, C817-782-6903/04/0	Same as Originating Activity	0700-2200 local, OT by NOTAM	371

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
VR144	97 OSS/DOA, 400 N Sixth St., Altus AFB, OK 73521 DSN 866-6098, C580-481-6098.	97 OSS/OSK, 400 N Sixth St. Suite 12, Altus AFB, OK 73521 DSN 866-7110.	0830-0230 Local Mon-Fri	72
VR1445	388 RANS/RST, 6606 Cedar Lane, Hill AFB, UT 84056-5812, DSN 777-4401, C801-777-4	Same as Originating Activity.	0700-2400 lcl Mon-Thurs, 0700-1800 lcl Fri, 0800-1700 lcl Sat	10
VR1446	388 RANS/RST, 6606 Cedar Lane, Hill AFB, UT 84056-5812, DSN 777-4401, C801-777-4	Same as Originating Activity.	0700-2400 lcl Mon-Thurs, 0700-1800 lcl Fri, 0800-1700 lcl Sat	10
VR151	COMTRAWING TWO, NAS Kingsville, TX 78363 DSN 876-6518/6283, C361-516-6518/6283/6	Same as Originating Activity	Daily 0600-2200 local	229
VR152	DET 1, 184 IW, Smokey Hill Ang Range, 84 W Farrelly Rd, Salina, KS 67401-9407. P	Same as Originating Activity	Continuous	190
VR1520	114 FW (ANG), Joe Foss Field, Sioux Falls, SD 57104-0264 DSN 798-7745/7746, C605	Same as Originating Activity.	Daylight hours, Mon-Sat, OT By NOTAM	279
VR1521	114 FW (ANG), Joe Foss Field, Sioux Falls, SD 57104-0264 DSN 798-7745/7746, C605	Same as Originating Activity.	Daylight hours, Mon-Sat, OT by NOTAM	279
VR1525	509 OSS/OSKA, 905 Spirit Blvd, Whiteman AFB, MO 65305 DSN 975-1713/1754, C660-68	Same as Originating Activity	Sunrise-Sunset Sun-Fri	124
VR1546	188FW Arkansas ANG , 4850 Leigh Ave., Fort Smith, AR 72903-6096 DSN 778-5502.	Same as Originating Activity. Route scheduled no more than 72 hr in advance. Min	Continuous	123
VR156	149 FTR GP (TX-ANG), Kelly AFB, TX 78241 DSN 945-5934, C210-925-5934.	Same as Originating Activity	0800-1830 local daily, Prior coordination required for Sun-Mon operations	210
VR158	80th Flying Training Wing, 1911 J. Ave. STE 6, Sheppard AFB, TX 76311-2056 DSN 7	90 FTS/DOTOD, Sheppard AFB, TX 76311 DSN 736-2675/4995, C940-676-2675/4995.	Sunrise-Sunset Mon-Fri; OT by NOTAM	210
VR159	80th Flying Training Wing, 1911 J. Ave. STE 6, Sheppard AFB, TX 76311-2056 DSN 7	90 FTS/DOTOD, Sheppard AFB, TX 76311 DSN 736-2675/4995, C940-676-2675/4995.	Sunrise-Sunset Mon-Fri, OT by NOTAM	206
VR1616	ANG CRTC, Camp Douglas, WI 54618-5001 DSN 871-1445 C608-427-1445.	Same as Originating Activity	Sunrise to Sunset Mon-Sat, OT by NOTAM	169
VR1617	180th TFG/DO (ANG), Toledo Express Airport, Swanton, OH 43558 DSN 580-4084.	Same as Originating Activity	Sunrise-2100 local	190
VR162	80th Flying Training Wing, 1911 J. Ave. STE 6, Sheppard AFB, TX 76311-2056 DSN73	90 FTS/DOTOD, Sheppard AFB, TX 76311 DSN 736-2675/4995, C817-676-2675/4995.	Sunrise-Sunset Mon-Fri, OT by NOTAM	233
VR1624	ALPENA CRTC/OTM, 5884 A. Sreet, Alpena, MI 49707-8125 DSN 741-6509/6226.	Same as Originating Activity	Sunrise-Sunset	233
VR1625	ALPENA CRTC/OTM, 5884 A. Sreet, Alpena, MI 49707-8125 DSN 741-6509/6226.	Same as Originating Activity	Sunrise-Sunset	167
VR1626	ALPENA CRTC/OTM, 5884 A. Sreet, Alpena, MI 49707-8125 DSN 741-6509/6226.	Same as Originating Activity	Sunrise-Sunset	145
VR1627	ALPENA CRTC/OTM, 5884 A. Sreet, Alpena, MI 49707-8125 DSN 741-6509/6226.	Same as Originating Activity	Sunrise-Sunset	226
VR1628	ALPENA CRTC/OTM, 5884 A. Sreet, Alpena, MI 49707-8125 DSN 741-6509/6226.	Same as Originating Activity	Sunrise-Sunset	283
VR1629	ALPENA CRTC/OTM, 5884 A. Sreet, Alpena, MI 49707-8125 DSN 741-6509/6226.	Same as Originating Activity	Sunrise-Sunset	218
VR163	80th Flying Training Wing, 1911 J. Ave. STE 6, Sheppard AFB, TX 76311-2056 DSN 7	90 FTS/DOTOD, Sheppard AFB, TX 76311 DSN 736-2675/4995, C940-676-2675/4995.	Sunrise-Sunset Mon-Fri, OT by NOTAM	195
VR1631	123 ACS, Blue Ash, OH 45242 DSN 340-2950, C513-936-2950.	Same as Originating Activity	Continuous	230

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
VR1632	123 ACS, Blue Ash, OH 45242 DSN 340-2950, C513-936-2950.	Same as Originating Activity	Continuous	202
VR1633	123 ACS, Blue Ash, OH 45242 DSN 340-2950, C513-936-2950.	Same as Originating Activity	Continuous	217
VR1635	183 FW/OSF, Capital Airport, Springfield, IL 62707 DSN 892-8202.	Same as Originating Activity	Sunrise-Sunset only	135
VR1636	Alpena CRTC/OTM (ANG), 5884 A. Street, Alpena, MI 49707-8125 DSN 741-3509/3226.	Same as Originating Activity	Continuous	137
VR1638	180TH TFG/DO, Toledo Express Airport, Swanton, OH 43558 DSN 580-4084.	Same as Originating Activity	Sunrise-2100 local	152
VR1639	ALPENA CRTC/OTM, 5884 A. Sreet, Alpena, MI 49707-8125 DSN 741-6509/6226.	Same as Originating Activity	Sunrise-Sunset	218
VR1640	122 FW, Ft. Wayne IAP, IN 46809-0122 DSN 778-3202, C260-478-3202.	Same as Originating Activity	1300-0300Z++ daily	228
VR1641	122 FW, Ft. Wayne IAP, IN 46809-0122 DSN 778-3202, C260-478-3202.	Same as Originating Activity	1300-0300Z++ daily	135
VR1642	122 FW, Ft. Wayne IAP, IN 46809-0122 DSN 778-3202, C260-478-3202.	Same as Originating Activity	1300-0100Z++ daily	176
VR1644	ALPENA CRTC/OTM, 5884 A. Sreet, Alpena, MI 49707-8125 DSN 741-6509/6226.	Same as Originating Activity	Sunrise-Sunset	190
VR1645	ALPENA CRTC/OTM, 5884 A. Sreet, Alpena, MI 49707-8125 DSN 741-6509/6226.	Same as Originating Activity	Sunrise-Sunset	167
VR1647	ALPENA CRTC/OTM, 5884 A. Sreet, Alpena, MI 49707-8125 DSN 741-6509/6226.	Same as Originating Activity	Sunrise-Sunset	226
VR1648	ALPENA CRTC/OTM, 5884 A. Sreet, Alpena, MI 49707-8125 DSN 741-6509/6226.	Same as Originating Activity	Sunrise-Sunset	283
VR1650	ANG CRTC, Camp Douglas, WI 54618-5001 DSN 871-1445 C608-427-1445.	Same as Originating Activity	0730 local-Sunset Tue-Sat, OT by NOTAM	84
VR1666	Alpena CRTC/OTM (ANG), 5884 A. Street, Alpena, MI 49707-8125 DSN 741-3509/3226.	Same as Originating Activity	Continuous	137
VR1667	180 TFG/DO, Toledo Express Airport, Swanton, OH 43558 DSN 580-4084.	Same as Originating Activity	Sunrise - 0200Z++	190
VR1668	180 TFG/DO, Toledo Express Airport, Swanton, OH 43558 DSN 580-4084.	Same as Originating Activity	Sunrise-2100 local	152
VR1679	JFAC-IN/DET 1, Atterbury ANG Range, Bldg 124, Camp Atterbury, IN 46124 DSN 569-2	Same as Originating Activity	Sunrise-Sunset Tue-Sun, OT by NOTAM	264
VR168	COMTRAWING TWO, NAS Kingsville, TX 78363 DSN 876-6518/6283, C361-516-6518/6283/6	Same as Originating Activity	0600-2400 local daily	247
VR1709	177 FW/DET1 (ANG), Atlantic City ANGB, Atlantic City NJ 08234-9500 DSN 455-6707.	Same as Originating Activity	TUE-FRI 1230-2130Z++	294
VR1711	113 WG, Andrews AFB, MD 20331 DSN 857-3307/08, C240-857-3307/3308/4190.	Same as Originating Activity	0730 local-Sunset daily	158
VR1712	113 WG, Andrews AFB, MD 20331 DSN 857-3307/08, C240-857-3307/3308/4190.	Same as Originating Activity	0730 local-Sunset daily	186
VR1713	113 WG, Andrews AFB, MD 20331 DSN 857-3307/08, C240-857-3307/3308/4190.	Same as Originating Activity	0730 local-Sunset daily	194
VR1721	20 OSS/OSTA, Shaw AFB, SC 29152 DSN 965-1121/1122, C803-895-1121/1122, Fax DSN 9	20 OSS/OSOS, Shaw AFB, SC 29152-5000 DSN 965-1118/1119, C803-895-1118, Fax DSN 9	Continuous	172
VR1722	192nd ANG		Sunrise-Sunset	303
VR1726	20 OSS/OSTA, Shaw AFB, SC 29152 DSN 965-1121/1122, C803-895-1121/1122, Fax DSN 9	20 OSS/OSOS, Shaw AFB, SC 29152-5000 DSN 965-1118/1119, C803-895-1118, Fax DSN 9	Continuous	144
VR1743	20 OSS/OSTA, Shaw AFB, SC 29152 DSN 965-1121/1122, C803-895-1121/1122, Fax DSN 9	20 OSS/OSOS, Shaw AFB, SC 29152-5000 DSN 965-1118/1119, C803-895-1118, Fax DSN 9	Continuous	144

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
VR1753	COMSTRKFIGHTWINGLANT, NAS Oceana, Virginia Beach, VA 23460-5200 DSN 433-9141, C7	FACSFAC/VACAPES, NAS Oceana, Virginia Beach, VA 23460 DSN 433-1228 C757-433-1228	Continuous	172
VR1754	COMSTRKFIGHTWINGLANT, NAS Oceana, Virginia Beach, VA 23460-5200 DSN 433-9141, C7	FACSFAC/VACAPES, NAS Oceana, Virginia Beach, VA 23460 DSN 433-1228 C757-433-1228	Continuous	371
VR1755	COMSTRKFIGHTWINGLANT, NAS Oceana, Virginia Beach, VA 23460-5200 DSN 433-9141, C7	FACSFAC/VACAPES, NAS Oceana, Virginia Beach, VA 23460 DSN 433-1228 C757-433-1228	Continuous	224
VR1756	COMSTRKFIGHTWINGLANT, NAS Oceana, Virginia Beach, VA 23460-5200 DSN 433-9141, C7	FACSFAC/VACAPES, NAS Oceana, Virginia Beach, VA 23460 DSN 433-1228 C757-433-1228	Continuous	362
VR1757	COMSTRKFIGHTWINGLANT, NAS Oceana, Virginia Beach, VA 23460-5200 DSN 433-9141, C7	FACSFAC/VACAPES, NAS Oceana, Virginia Beach, VA 23460 DSN 433-1228 C757-433-1228	Continuous	168
VR1759	COMSTRKFIGHTWINGLANT, NAS Oceana, Virginia Beach, VA 23460-5200 DSN 433-9141, C7	FACSFAC/VACAPES, NAS Oceana, Virginia Beach, VA 23460 DSN 433-1228, C757-433-122	Continuous	194
VR176	150 FW OG/CC 2251, Air Guard Rd. SE, Kirtland AFB, NM 87117-5875 DSN 246-7426.	Same as Originating Activity	Normally 1500-2400Z++ daily, usage between 2400-1500Z++ is available	470
VR179	ANG CRTC-Gulfport/OSA, 4715 Hewes Ave, Gulfport, MS 39507-4324 DSN 363-6027, C22	Same as Originating Activity	Continuous	171
VR1800	174th FW, 6001 E. Molloy Rd, Syracuse, NY 13211-7099 DSN 489-9217.	174th FW, Det. 1, Ft. Drum, NY 13608 DSN 772-5990/2835 C315-772-5990.	0800 local-Sunset daily	136
VR1801	174th FW, 6001 E. Molloy Rd, Syracuse, NY 13211-7099 DSN 489-9217.	174th FW, Det. 1, Ft. Drum, NY 13608 DSN 772-5990/2835, C315-772-5990.	0800 local-Sunset daily	130
VR184	97 OSS/DOA, 400 N. Sixth Street, Altus AFB, OK 73521 DSN 866-6098 C580-481-6098.	97 OSS/OSK, 400 N. Sixth Street, Suite 12, Altus AFB, OK 73521 DSN 866-7110.	0830-0230 local, Mon-Fri	71
VR186	301 OG/SUA, NAS JRB, Fort Worth, TX 76127 DSN 739-6903/04/05, C817-782-6903/04/0	Same as Originating Activity	0700-2200 local, OT by NOTAM	295
VR187	12 OSS/OSOA, 501 I Street East, Randolph AFB, TX 78150-4333 DSN 487-5580, C210-6	99 FTS, 1450 5TH Street East, Randolph AFB, TX 78150-5000 DSN 487-6746, C210-652	Sunrise-Sunset, daily	243
VR188	12 OSS/OSOA, 501 I Street East, Randolph AFB, TX 78150-4333 DSN 487-5580, C210-6	99 FTS, 1450 5th Street East, Randolph AFB, TX 78150-5000 DSN 487-6746, C210-652	Sunrise-Sunset, daily	213
VR189	188FW ARKANSAS ANG, 4850 Leigh Ave., Fort Smith, AR 72903-6096 DSN 778-5502.	Same as Originating Activity. Route scheduled no more than 72 hr in advance. Min	Continuous	219
VR190	97 OSS/DOA, 400 N. Sixth Street, Altus AFB, OK 73521 DSN 866-6098 C580-6098.	97 OSS/OSK, 400 N. Sixth Street, Suite 12, Altus AFB, OK 73521 DSN 866-7110.	0830-0230 local Mon-Fri	152
VR1900	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	355 CTS/JSO, Eielson AFB, AK 99702 C907-377-9327/3125, DSN 317-377-9327.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	234
VR1902	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406 C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	230
VR1905	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	292

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
VR1909	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	355 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-9327, C907-377-9327/3125.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	76
VR191	97 OSS/DOA, 400 N. Sixth Street, Altus AFB, OK 73521 DSN 866-6098 C580-6098.	97 OSS/OSK, 400 N. Sixth Street,Suite 12, Altus AFB, OK 73521 DSN 866-7110.	0830-0230 local Mon-Fri	152
VR1912	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	177
VR1915	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	292
VR1916	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	355 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-9327, C907-377-9327/3125.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	135
VR1939	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	355 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-9327, C907-377-9327/3125.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	76
VR196	47 OSS/OSOR, 570 2nd Street, Ste. 6, Laughlin AFB, TX 78843 DSN 732-5864, C830-2	86 FTS/DOS, 307 2nd St, Laughlin AFB, TX 78843 DSN 732-5584, C830-298-5584. Sche	Sunrise-Sunset daily	189
VR197	47 OSS/OSOR, 570 2nd Street, Ste. 6, Laughlin AFB, TX 78843 DSN 732-5864, C830-2	86 FTS/DOS, 307 2nd St, Laughlin AFB, TX 78843 DSN 732-5584, C830-298-5584. Sche	Sunrise-Sunset daily	189
VR198	97 OSS/DOA, 400 N. 6th St., Ste. A, Altus AFB, OK 73521 DSN 866-6098, C580-481-6	Same as Originating Activity	0600-0300 local, Mon-Fri, OT by NOTAM	195
VR199	97 OSS/DOA, 400 N. 6th St., Ste. A, Altus AFB, OK 73521 DSN 866-6098, C580-481-6	Same as Originating Activity	0600-0300 local, Mon-Fri, OT by NOTAM	195
VR201	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	Daylight hours, OT by NOTAM	168
VR202	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	Daylight hours, OT by NOTAM	312
VR208	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	0800-1630 local	194
VR209	Commander, Strike Fighter Wing, U.S. Pacific Fleet, 001 K Street, NAS Lemoore, C	Same as Originating Activity	Daylight hours, OT by NOTAM	593
VR222	57 OSS/OSOS, Nellis AFB, NV 89191-7001 DSN 682-2040, C702-652-2040.	Same as Originating Activity	Continuous	359
VR223	56 RMO/ASM, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-5855, C623-856-	56 RMO/ASMS, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-7654, C623-856	0600-2400 Mon-Fri local, Wkend/hol when sked with Goldwater Rng/Sell MOA Msn	127
VR231	56 RMO/ASM, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-5855, C623-856-	56 RMO/ASMS, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-7654, C623-856	0600-2400 Mon-Fri local, Wkend/hol when sked with Goldwater Rng/Sell MOA Msn	109
VR239	56 RMO/ASM, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-5855, C623-856-	56 RMO/ASMS, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-7654, C623-856	0600-2400 Mon-Fri local, Wkend/hol when sked with Goldwater Rng/Sell MOA Msn	300
VR241	56 RMO/ASM, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-5855, C623-856-	56 RMO/ASMS, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-7654, C623-856	0600-2400 Mon-Fri local, Wkend/hol when sked with Goldwater Rng/Sell MOA Msn	218

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
VR242	56 RMO/ASM, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-5855, C623-856-	56 RMO/ASMS, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-7654, C623-856	0600-2400 Mon-Fri local, Wkend/hol when sked with Goldwater Rng/Sell MOA Msn	217
VR243	56 RMO/ASM, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-5855, C623-856-	56 RMO/ASMS, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-7654, C623-856	0600-2400 Mon-Fri local, Wkend/hol when sked with Goldwater Rng/Sell MOA Msn	269
VR244	56 RMO/ASM, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-5855, C623-856-	56 RMO/ASMS, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-7654, C623-856	0600-2400 Mon-Fri local, Wkend/hol when sked with Goldwater Rng/Sell MOA Msn	272
VR245	56 RMO/ASM, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-5855, C623-856-	56 RMO/ASMS, 7224 N. 139th Drive, Luke AFB, AZ 85309-1420 DSN 896-7654, C623-856	0600-2400 Mon-Fri local, Wkend/hol when sked with Goldwater Rng/Sell MOA Msn	208
VR249	G-3, 3D MAW, MCAS Miramar, San Diego, CA 92145 DSN 267-9462, C858-577-9462. Non-	Same as Originating Activity	Continuous	101
VR259	G-3, 3D MAW, MCAS Miramar, San Diego, CA 92145 DSN 267-5157, C858-577-5157. Non-working hours DSN 267-9517/9518, C858-577-9517/9518	Same as Originating Activity	Continuous	309
VR260	162 FW/OGC, 1660 E. El Tigre Way, Tucson, AZ 85706-8086 DSN 844-6371 C520-295-63	Same as Originating Activity	Continuous	276
VR263	162 FW/OGC, 1660 E. El Tigre Way, Tucson, AZ, 85706-6086 DSN 844-6371 C520-295-6	Same as Originating Activity	Continuous	433
VR267	355 OSS/OSOA, 3895 S. 6th St. Suite 200, Davis-Monthan AFB, AZ 85707 DSN 228-468	355 OSS/OSOSO, Davis-Monthan AFB, AZ 85707 1500-2300Z Mon-Fri, no earlier than o	1300-0530Z	199
VR268	355 OSS/OSOA, 3895 S. 6th St. Suite 200, Davis-Monthan AFB, AZ 85707 DSN 228-468	355 OSS/OSOSO, Davis-Monthan AFB, AZ 85707 1500-2300Z Mon-Fri, no earlier than o	1300-0530Z++	155
VR269	355 OSS/OSOA, 3895 S. 6th St. Suite 200, Davis-Monthan AFB, AZ 85707 DSN 228-468	355 OSS/OSOSO, Davis-Monthan AFB, AZ 85707 1500-2300Z Mon-Fri, no earlier than o	1300-0530Z++	181
VR316	124 WG/OGAM (ANG), GOWEN Field, 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 42	124 WG/OSS (ANG), GOWEN Field, 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 422	Continuous or by NOTAM	301
VR319	124 WG/OGAM (ANG), GOWEN Field, 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 42	124 WG/OSS (ANG), GOWEN Field, 3996 W. Aeronca St., Boise, ID 83705-8004 DSN 422	Continuous or by NOTAM	301
VR331	62 OSS/OSK, McChord Fld, 1172 Levitow Blvd., WA 98438 DSN 382-3615, C253-982-361	62 OSS/OSO, McChord AFB, 100 Main St., WA 98438 DSN 382-9925, C253-982-2635. Dut	Continuous	179
VR410	140th Wing /Airspace Office, Buckley AFB, Aurora Co, 80011-9546 DSN 847-9470/947	Same as Originating Activity.	0800-1600 local Tue-Sat, OT by NOTAM	15
VR411	140th Wing /Airspace Office, Buckley AFB, Aurora Co, 80011-9546 DSN 847-9470/947	Same as Originating Activity.	0800-1600 local Tue-Sat, OT by NOTAM	15
VR413	140th Wing /Airspace Office, Buckley AFB, Aurora Co, 80011-9546 DSN 847-9470/947	140th Wing /Airspace Office, Buckley AFB, Aurora Co, 80011-9546 DSN 847-9470/947	0800-1600 local Tue-Sat, OT by NOTAM	184
VR510	114 FW (ANG), Joe Foss Field, Sioux Falls, SD 57104-0264 DSN 798-7754/7746, C605	Same as Originating Activity	Daylight Hours Tue-Sat, OT by NOTAM	315
VR511	132 FW OG/CC (ANG), 3100 McKinley Ave, Des Moines, IA 50321-2799 DSN 256-8250 C5	Same as Originating Activity	By NOTAM, (2 hr prior notification required)	264

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** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
VR512	132 FW OG/CC (ANG), 3100 McKinley Ave, Des Moines, IA 50321-2799 DSN 256-8250 C5	Same as Originating Activity	By NOTAM, 2hr prior notification required	264
VR531	DET 1, 184 IW, Smokey Hill Ang Range, 84 W Farrelly Rd, Salina, KS 67401-9407. P	Same as Originating Activity	Continuous	181
VR532	DET 1, 184 IW, Smokey Hill Ang Range, 84 W Farrelly Rd, Salina, KS 67401-9407. P	Same as Originating Activity	Continuous	329
VR533	DET 1, 184 IW, Smokey Hill Ang Range, 84 W Farrelly Rd, Salina, KS 67401-9407. P	Same as Originating Activity	Continuous	165
VR534	DET 1, 184 IW, Smokey Hill Ang Range, 84 W Farrelly Rd, Salina, KS 67401-9407. P	Same as Originating Activity	Continuous	169
VR535	DET 1, 184 IW, Smokey Hill Ang Range, 84 W Farrelly Rd, Salina, KS 67401-9407. P	Same as Originating Activity	Continuous	179
VR536	DET 1, 184 IW, Smokey Hill Ang Range, 84 W Farrelly Rd, Salina, KS 67401-9407. P	Same as Originating Activity	Continuous	157
VR540	132 FW OG/CC (ANG), 3100 McKinley Ave, Des Moines, IA 50321-2799 DSN 256-8250 C5	Same as Originating Activity	By NOTAM, 2 hr prior notification required	319
VR541	132 FW OG/CC (ANG), 3100 McKinley Ave, Des Moines, IA 50321-2799 DSN 256-8250 C5	Same as Originating Activity	By NOTAM, 2 hr prior notification required	289
VR544	114 FW (ANG), Joe Foss Field, Sioux Falls, SD 57104-0264 DSN 798-7754/7746, C605	Same as Originating Activity	By NOTAM, 2 hours and 15 minutes prior to entry time required	121
VR545	114 FW (ANG), Joe Foss Field, Sioux Falls, SD 57104-0264 DSN 798-7754/7746, C605	Same as Originating Activity	By NOTAM, 2 hours and 15 minutes prior to entry time required	121
VR552	DET 1, 184 IW, Smokey Hill Ang Range, 84 W Farrelly Rd, Salina, KS 67401-9407. P	Same as Originating Activity	Continuous	190
VR604	148TH FIG (ANG), Duluth Intl, MN 55811 DSN 825-7265.	Same as Originating Activity	1400-0500Z++ daily, 0500-1400Z++ allowable	680
VR607	148TH FIG (ANG), Duluth Intl, MN 55811 DSN 825-7265.	Same as Originating Activity	1400-0500Z++ daily, 0500-1400Z++ allowable	680
VR615	183 FW/OSF, Capital Airport, Springfield, IL 62707 DSN 892-8202.	Same as Originating Activity	Daylight hours	167
VR619	Jefferson Range JFAC-IN-DET2, 1661 W. Niblo Rd., Madison, IN 47250 C812-689-7295	Same as Originating Activity	Sunrise-Sunset Tue-Sun, OT by NOTAM	136
VR634	Alpena CRTC/OTM (ANG), 5884 A. Street, Alpena, MI 49707-8125 DSN 741-3509/3226.	Same as Originating Activity	Continuous	181
VR664	Alpena CRTC/OTM (ANG), 5884 A. Street, Alpena, MI 49707-8125 DSN 741-3509/3226.	Same as Originating Activity	Continuous	181
VR704	DET 1, 193 SOG, 26139 Ammo Road, Annville, PA 17003-5180 C717-861-2475/2912 Toll	Same as Originating Activity	0800 local to Sunset daily	285
VR705	DET 1, 193 SOG, 26139 Ammo Road, Annville, PA 17003-5180 C717-861-2475/2912 Toll	Same as Originating Activity	0800 local-Sunset daily	214
VR707	DET 1, 193 SOG, 26139 Ammo Road, Annville, PA 17003-5180 C717-861-2475/2912 Toll	Same as Originating Activity	0800 local-Sunset daily	287
VR708	175 FG (ANG), Baltimore, MD 21220-2899 DSN 243-6375.	Same as Originating Activity	Sunrise-Sunset	126
VR724	174th FW, 6001 E. Molloy Rd, Syracuse, NY 13211-7099 DSN 489-9217.	174 FW, Det 1, Ft. Drum, NY 13608 DSN 772-5990/2835, C315-772-5990.	0800-Sunset daily, OT by NOTAM	141
VR725	174th FW, 6001 E. Molloy Rd, Syracuse, NY 13211-7099 DSN 489-9217.	174 FW, Det 1. Ft. Drum, NY 13608 DSN 772-5990/2835, C315-772-5990.	0800-Sunset daily, OT by NOTAM	114
VR840	Eastern Air Defense (EADS) DSN 587-6247/6313.	Same as Originating Activity	0800 local-Sunset daily	175
VR841	Eastern Air Defense (EADS) DSN 587-6247/6313.	Same as Originating Activity	0800 local-Sunset daily	97
VR842	Eastern Air Defense (EADS) DSN 587-6247/6313.	Same as Originating Activity	0800 local-Sunset daily	87

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Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
VR931	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	159
VR932	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	159
VR933	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	194
VR934	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	3 OSS/OSOS, Elmendorf AFB, AK 99506-2130 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	194
VR935	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	355 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-9327, C907-377-9327/3125.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	241
VR936	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	354 OSS/OSCR, Eielson AFB, AK 99702 DSN 317-377-9327, C907-377-9327/3125.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	241
VR937	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	354 OSS/OSCR, Eielson AFB, AK 99702 DSN 317-377-9327, C907-377-9327/3125.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	225
VR938	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	354 OSS/OSCR, Eielson AFB, AK 99702 DSN 317-377-9327, C907-377-9327/3125.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	225
VR940	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	355 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-9327, C907-377-9327/3125.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	240
VR941	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506-2100 DSN 317-552-24	355 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-9327, C907-377-9327/3125.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	232
VR954	611 AOG/CC, 9480 Pease Ave., Ste 102, Elmendorf AFB, AK 99506-2100 DSN 317-552-2	354 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-9372/3125, C907-377-9372/3125.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	371
VR955	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	354 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-9372/3125, C907-377-9372/3125.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	271
VR724	174th FW, 6001 E. Molloy Rd, Syracuse, NY 13211-7099 DSN 489-9217.	174 FW, Det 1, Ft. Drum, NY 13608 DSN 772-5990/2835, C315-772-5990.	0800-Sunset daily, OT by NOTAM	141
VR725	174th FW, 6001 E. Molloy Rd, Syracuse, NY 13211-7099 DSN 489-9217.	174 FW, Det 1. Ft. Drum, NY 13608 DSN 772-5990/2835, C315-772-5990.	0800-Sunset daily, OT by NOTAM	114
VR840	104 FW, Barnes ANGB, Westfield, MA 01085-1482 DSN 698-1228/1229, C413-568-9151 e	Same as Originating Activity	0800 local-Sunset daily	175
VR841	104 FW, Barnes ANGB, Westfield, MA 01085-1482 DSN 698-1228/1229, C413-568-9151 e	Same as Originating Activity	0800 local-Sunset daily	97
VR842	104 FW, Barnes ANGB, Westfield, MA 01085-1482 DSN 698-1228/1229, C413-568-9151 e	Same as Originating Activity	0800 local-Sunset daily	87
VR931	611 AOG/CC, 9480 Pease Ave., Ste 102, Elmendorf AFB, AK 99506-2100 DSN 317-552-2	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	67
VR932	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	67

* Data fields are limited to 80 characters in the source database (National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File)); therefore, some data field entries are not complete. Please refer to DoD Flight Information Publications for complete originating and scheduling activity information.

** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

Military Training Route	Originating Agency*	Scheduling Agency*	Effective Times	Length (NM)**
VR933	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	3 OSS/OSOS, Elmendorf AFB, AK 99506 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	206
VR934	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	3 OSS/OSOS, Elmendorf AFB, AK 99506-2130 DSN 317-552-2406, C907-552-2406.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	206
VR935	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	193
VR936	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	210
VR937	611 AOG/CC, 9480 Pease Ave., Ste 102, Elmendorf AFB, AK 99506-2100 DSN 317-552-2	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	184
VR938	611 AOG/CC, 9480 Pease Ave., Ste 102, Elmendorf AFB, AK 99506-2100 DSN 317-552-2	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	167
VR940	611 AOG/CC, 9480 Pease Ave., Ste 102, Elmendorf AFB, AK 99506-2100 DSN 317-552-2	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	106
VR941	611 AOG/CC, 9480 Pease Ave., Ste 102, Elmendorf AFB, AK 99506-2100 DSN 317-552-2	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	106
VR954	611 AOG/CC, 9480 Pease Ave., Ste 102, Elmendorf AFB, AK 99506-2100 DSN 317-552-2	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	371
VR955	611 AOC/CC, Elmendorf AFB, 10471 20th St, Ste. 160, AK 99506 DSN 317-552-2430, C	353 CTS/JSO, Eielson AFB, AK 99702 DSN 317-377-3005, C907-377-3005.	Normal use 0800-2000 local Mon-Fri, Not available 2200-0700 local	271

* Data fields are limited to 80 characters in the source database (National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File)); therefore, some data field entries are not complete. Please refer to DoD Flight Information Publications for complete originating and scheduling activity information.

** Length calculations were performed using an the appropriate Universal Transverse Mercator zones.

Source: Department of Defense based on data from the National Geospatial-Intelligence Agency (Digital Aeronautical Flight Information File, (effective: August 2014).

B ACRONYM LIST

A

AAR	After Action Review
AAV	Amphibious Assault Vehicle
AC	Active Component
ACM	Air Combat Maneuvers
ACMI	Air Combat Maneuver Instrumentation
ACUB	Army Compatible Use Buffer
AFB	Air Force Base
AFI	Air Force Instruction
AFSOC	Air Force Special Operations Command
AMC	Army Materiel Command
ARNG	Army National Guard
ARRM	Army Range Requirements Model
ARTS1	Advanced Radar Threat System Version 1
ARTS2	Advanced Radar Threat System Version 2
ASN EI&E	Assistant Secretary of the Navy Energy, Environment, and Installations
ATEC	Army Test and Evaluation Command
ATLS	Army Training Land Strategy
AWEA	American Wind Energy Association

B

BAC	Battle Area Complex
BARSTUR	Barking Sands Tactical Underwater Range
BCT	Brigade Combat Team
BFM	Basic Fighter Maneuvers
BLM	Bureau of Land Management
BOEM	Bureau of Ocean Energy Management
BOR	Bureau of Reclamation
BRAC	Base Realignment and Closure

C

CAA	Clean Air Act
CAB	Combat Aviation Brigade
CACTF	Combined Arms Collective Training Facility
CALFEX	Combined Arms Live-fire Exercise
CFIUS	Committee on Foreign Investment in the United States
CIO	Chief Information Officer
CJMT	Combined Joint Military Training
CMAGR	Chocolate Mountains Aerial Gunnery Range
CNMI	Commonwealth of the Northern Mariana Islands
COA	Certificate of Authorization or Waiver
CONUS	Continental United States
CPLO	Community Plans and Liaison Officer
CRIIS	Common Range Integrated Instrumentation System
CSAR	Combat Search and Rescue
CSE	Center Scheduling Enterprise
CWA	Clean Water Act

D

DAGIR	Digital Air/Ground Integration Range
DCAST	Data Collection and Scheduling Tool
DESI	Diesel Electric Submarine Initiative

DIADS	Digital Integrated Air Defense System
DMPI	Desired Mean Point of Impact
DMPRC	Digital Multi-Purpose Range Complex
DMPTR	Digital Multi-Purpose Training Range
DoD	Department of Defense
DOE	Department of Energy
DOI	Department of the Interior
DON	Department of the Navy
DPRI	Defense Policy Review Initiative
DRRS RAM	Defense Readiness Reporting System – Range Assessment Module
DSCA	Defense Support to Civil Authorities

E

E2O	Expeditionary Energy Office
EA	Environmental Assessment
EAP	Encroachment Action Plan
ECP	Encroachment Control Plan
EIC	European Infrastructure Consolidation
EIS	Environmental Impact Statement
ELMR	Enterprise Land Mobile Radio
EPR	Enhanced Performance Round
ESA	Endangered Species Act
ESS	Electronic Scoring Sites
ETC-IS	Exportable Training Capability – Instrumentation System
EW	Electronic Warfare

F

FAA	Federal Aviation Administration
FCC	Federal Communication Commission
FDNF	Forward Deployed Naval Forces
FIS	Facility Investment Strategy
FORSCOM	Forces Command
FRS	Fleet Replacement Squadron
FRTC	Fallon Range Training Complex
FUA	First Unit Assessment
FY	Fiscal Year
FYDP	Future Years Defense Program

G

GAO	Government Accountability Office
GBSAA	Ground Based Sense and Avoid Airborne
GPS	Global Positioning System

H

HRAIZ	High Risk of Adverse Impact Zones

I

IA	Integrating Architecture
ICEMAP	Installation Encroachment Management Plan
ICRMP	Integrated Cultural Resources Management Plan
IED	Improvised Explosive Device
IIT	Immersive Infantry Trainer
iMILES	Instrumentable-Multiple Integrated Laser Engagement System
INL	Island Night Lizard
INRMP	Integrated Natural Resources Management Plan
IOC	Initial Operating Capability
IPL	Integrated Priority List
IS	Instrumentation System
ISR	Installation Status Report
ITAM	Integrated Training Area Management
ITE	Integrated Training Environment

J

JBLM	Joint Base Lewis-McChord
JDAM	Joint Direct Attack Munition
JLOTS	Joint Logistics Over the Shore
JLUS	Joint Land Use Study

JPMRC	Joint Pacific Multinational Readiness Capability
JRFL	Joint Restricted Frequency List
JRTC	Joint Readiness Training Center
JSF	Joint Strike Fighter
JSOW	Joint Stand Off Weapon
JTAC	Joint Terminal Attack Controller
JTIDS	Joint Tactical Information Distribution System

L

LAC	Land Attack Cruise Missile
LATT	Low Altitude Tactical Training
LCAC	Landing Craft Air Cushion
LGTR	Laser Guided Training Round
LOMAH	Location of Misses and Hits
LT2	Live Training Transformation

M

MAGTF	Marine Air Ground Task Force
MCAGCC	Marine Corps Air Ground Combat Center
MCAS	Marine Corps Air Station
MCAT	Mission Compatibility Analysis Tool
MCB	Marine Corps Base
MCI	Marine Corps Installation
MCICOM	Marine Corps Installations Command
MCLB	Marine Corps Logistics Base
MCRD	Marine Corps Recruit Depot
MCSCP	Marine Corps Service Campaign Plan
MDLP	Multiple District Litigation Plan
MDW	Military District Washington
MEB	Marine Expeditionary Brigade
MEDCOM	Medical Command
METSAT	Meteorological Satellite
MILCON	Military Construction
MMPA	Marine Mammal Protection Act
MOA	Military Operations Area
MOU	Memorandum of Understanding
MOUT	Military Operations on Urban Terrain
MPA	Marine Protected Area
MPPEH	Material Potentially Possessing an Explosive Hazard
MPRC	Multi-Purpose Range Craft
MTR	Military Training Route
MVA	Military Value Analysis
MWTC	Mountain Warfare Training Center

N

NAS	National Airspace System
NAS	Naval Air Station
NAVSEA	Naval Sea Systems Command
NAWC	Naval Air Weapons Center
NB	Naval Base
NDAA	National Defense Authorization Act
NEPA	National Environmental Policy Act
NGO	Non-Governmental Organization
NMFS	National Marine Fisheries Service
NRCS	Natural Resources Conservation Service
NSAWC	Naval Strike and Air Warfare Center
NSWC	Naval Special Warfare Command
NTC	National Training Center
NTIA	National Telecommunications and Information Administration
NTTR	Nevada Test and Training Range
NUWC	Naval Undersea Warfare Center
NWSTF	Naval Weapons Systems Training Facility

O

OCS	Outer Continental Shelf
OCT	Observer-Controller-Trainers
OEA	Office of Economic Adjustment
OLF	Outlying Field
O&M	Operations and Maintenance

OMB	Office of Management and Budget
OOS	Ocean Observing System
OPFOR	Opposition Forces
OPNAV	Office of the Chief of Naval Operations
OSD	Office of the Secretary of Defense

P

PACOM	U.S. Pacific Command
PGM	Precision Guided Munitions
PMRF	Pacific Missile Range Facility
POM	Program Objective Memorandum
PPBE	Planning, Programming, Budgeting, and Execution
PUTR	Portable Underwater Training Range

Q

QA	Quality Assurance
QAP	Quality Assurance Plan
QC	Quality Control

R

R&D	Research and Development
RAICUZ	Range Air Installation Compatible Use Zone
RCMP	Range Complex Management Plan (Navy/ Marine Corps)
RCMP	Range Complex Master Plan (Army)
RCO	Range Control Officer
RCTC	Regional Collective Training Capability
RDT&E	Research Development Test & Evaluation
REPI	Readiness and Environmental Protection Integration
RFMSS	Range Facility Management Support System
ROD	Record of Decision
ROKAF	Republic of Korea Air Force
ROTHR	Relocatable Over the Horizon Radar
RPLANS	Real Property Planning and Analysis System
RSO	Range Safety Officer
RTKN	Real Time Kill Notification
RTLS	Range and Training Land Strategy

S

SAO	Situational Awareness Office
SCADA	Supervisory Control and Data Acquisition
SCI	San Clemente Island
SDB	Small Diameter Bomb
SDS	Spectrum Dependent Systems
SEA	Southern Expansion Area
SEAL	Sea, Air, and Land
SERPPAS	Southeast Regional Partnership for Planning and Sustainability
SESEF	Shipboard Electronic Systems Evaluation Facility
SFARP	Strike Fighter Advanced Readiness Program
SHOBA	Shore Bombardment Area
SOCAL	Southern California Offshore Range Complex
SRI	Sustainable Ranges Initiative
SRM	Sustainment, Restoration, and Modernization
SRR	Sustainable Ranges Report
SUA	Special Use Airspace
SWAG	Shock Wave Action Generator
SWTR	Shallow Water Test Range

T

T&E	Threatened and Endangered
T&E	Test and Evaluation
TCTS	Tactical Combat Training System
TECOM	Training and Education Command
TERF	Terrain Flight
TRACR	Targetry Range Automated Control and Recording

TRADOC	Training and Doctrine Command
TSPI	Time Space Position Information
TSS	Training Support System
TTP	Tactics, Techniques, and Procedures

U

U.S.C.	United States Code
UAS	Unmanned Aircraft System
USACE	U.S. Army Corps of Engineers
USAREUR	U.S. Army Europe
USARPAC	U.S. Army Pacific
USCENTCOM	U.S. Central Command
USD(P&R)	Under Secretary of Defense for Personnel and Readiness
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USPACOM	U.S. Pacific Command
USWTR	Undersea Warfare Training Range

V

VACAPES	Virginia Capes

W

WDZ	Weapon Danger Zone
WEA	Western Expansion Areas
WRP	Western Regional Partnership

Y

YTC	Yakima Training Center

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DEPARTMENT OF DEFENSE
UNITED STATES OF AMERICA