Department of Defense Legacy Resource Management Program

COOPERATIVE AGREEMENT HQ00341820010

Development and Implementation of Targeted Training Resources for Wildland Fire Operations on Military Lands

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December 2020

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Abstract

Introduction and Objectives:

Wildfires are a challenge for military installations and can directly impact mission success. Military training and testing ignite wildfires on installations; as a result, installations experience a disproportionate number of wildfires relative to their size. Wildfires can directly reduce the ability to complete missions and can pose a threat to vital national security resources. Furthermore, installation fire management programs face unique challenges and complexities for both wildfire suppression and prescribed fire operations in the planning and response phases, standardization of training and equipment, and integration with the greater fire management community and surrounding landowners.

Our intent is to provide solutions to these challenges by providing tools for addressing planning complexity, methods for improving communications and integration with the surrounding fire management community and landowners, and targeted training materials.

Technical Approach:

- Survey civilian fire program managers, line officers, and wildland fire training officials on military lands
- Utilize survey information to develop and refine suite of targeted training resources

Results:

- While installation fire management programs are transitioning to National Wildfire Coordinating Group (NWCG) standards, installation fire managers seek access to training and assignments within the larger fire management community.
- Installation fire managers can be better supported in the process of developing specific in-briefing materials and in collaborating with the greater fire management community to address training and large-scale planning needs.

Benefits:

These tools can help installation fire managers better navigate the complex planning process, increase collaboration and integration, deploy targeted training materials, and build a more robust and safe fire management program. These solutions are applicable to both new and existing fire management programs.

Executive Summary

Introduction

Wildfires are a challenge for military installations and can directly impact mission success. Military training and testing ignite wildfires on installations; as a result, installations experience a disproportionate number of wildfires relative to their size. Wildfires can directly reduce the ability to complete missions through destruction of vegetation necessary for training, creation of unsafe conditions, and obscuration of airspace by smoke. Wildfires also pose a threat to vital national security resources (facilities, sensors, communications, etc.). Many of these wildfires are contained through aggressive initial attack or are proactively managed through prescribed fire and fuels management, but preparedness for unplanned large-scale events could be improved. Suppression efforts and prescribed fire face similar unique challenges and complexities throughout the planning and response phases, in standardization of training and equipment, and in integration with the greater fire management community and surrounding landowners.

Objectives

Our intent is to provide shared solutions to these common challenges by providing tools for addressing planning complexity, providing targeted training materials, and improving communications and integration with the surrounding fire management community and landowners. The suite of shared solutions will provide immediate opportunities for both new and existing installation fire management programs to build a robust, integrated, and ultimately safer fire program.

Technical Approach

We surveyed civilian fire program managers, line officers, and wildland fire training officials who work on military lands to (1) asses the composition of their fire program workforce, (2) determine key in-briefing topics for incoming civilian resources, and (3) identify additional National Wildfire Coordinating Group (NWCG) training needs and annual refresher materials for Department of Defense (DoD) civilian employees. The results were used to further define common challenges faced by installation fire managers, uncover training needs and obstacles to training, and refine the material included in our deliverables. We then developed a suite of shared solutions to address these common challenges and needs which can be used by resources at all levels in the fire management chain of command.

Results and Discussion

The Wildland Fire Training Needs on Air Force and Army Installations Survey results indicated:

- Integration within the larger fire management community is key
- Most installation fire management programs involve external agencies or cooperators (Figure 1) and identified ‘non-traditional’ key briefing topics (Figure 2), but very few have created in-briefing documents specific to these external resources
- Installations use NWCG certifications and training materials; significant hurdles exist to meeting training requirements and receiving assignments (Figure 3)
- Installation fire managers can be better supported in the process of developing specific in-briefing materials and collaborating with the greater fire management community

Guided by the survey results, we developed a suite of deliverables to aid installation fire managers in 1) navigating the complex planning process, 2) developing targeted in-briefings, 3) increasing communication and integration in the larger fire management community. The suite dovetails with established NWCG standards and products and is applicable to both new and existing fire management programs to build more comprehensive and safe fire management programs. The suite includes:

- The Military Installation Fire Management In-briefing Development Guidebook (MIDG) helps fire managers improve the robustness of fire management programs by providing a pathway to navigate the complex planning process and the development of in- briefing documents to integrate resources from the broader fire community. The MIDG identifies key players on and off-installation, enhances preparedness for large-scale unexpected events, and can link installation to valuable resources for planned operations and access to training.
- The MIDG Matrix serves as a reference summary for fire managers. It is split into two parts: Part I is a summary of key points for preparing in-briefing materials for different types and levels of incidents; Part II is a cross-reference of existing forms, manuals, and guidance for developing in-briefing materials.
- Two field-ready pocket cards accompany the suite: 1) The Military Installation In-Briefing Pocket Card is designed for incoming resources, 2) The Military Installation Fire Manager Briefing Pocket Card is for fire managers who are briefing incoming resources. Both pocket cards supplement the existing Incident Response Pocket Guide (IRPG) Briefing Checklist and NWCG protocol.
- Four Wildland Fire Operations on Military Lands Refresher Videos round out the suite: 1) DoD Watch Out Situations, 2) Wildland Fire on U.S. Air Force Installations, 3) Wildland Fire on U.S. Army Installations, and 4) DoD Wildland Fire Operations: Six Steps for Safety. These videos address unique hazards and challenges on military installations, provide mission context, and mirror the information in the pocket cards.

Immediate Benefits and Implications for Future Research

Policy engagement with NWCG and larger fire management community

Implementation of the suite of solutions has immediate and practical applications for existing and developing fire management programs within the DoD. Existing programs can identify missing key players, improve relationships with surrounding landowners and local fire resources, gain resources and support to transition to NWCG qualifications, and can enhance preparedness for large-scale unplanned events. Developing programs can utilize the pathways to develop in-briefing materials, implement NWCG standards, cultivate connections with the greater fire management community and local communities, and better navigate the complex planning process. The common challenges faced by installation fire management programs are opportunities for increased preparedness; better coordination and integration will produce better outcomes and safer fire programs. There is immense possibility for installation fire management programs to make impacts at a large scale and be a leader in the fire management community.

Cooperative Training Opportunities

Installation fire management programs can leverage relationships with the greater fire management community to train with partners and cooperators and host training events on-

installation. Integration between military and non-military fire programs can benefit the training and assignment needs of all parties and promotes cohesion and safety. For example, Incident Commander Type 4 (ICT4) is a bottleneck for many wildland firefighters due to limited assignments and the need to complete specific wildfire tasks; many military installations have the capacity to provide ICT4 assignments for partners due to the high frequency of wildfires. Additionally, many installations have the acreage available to provide low-risk training scenarios in remote sections of the installation or adjacent to previously burned units. In turn, partners can provide qualified trainers to assist with task books and courses to help installations achieve and maintain their NWCG qualifications.

Utilizing Training Consultants

To build a robust fire management program, installation fire management programs and personnel should consider fire management training consultants to assess training capacity and methodology, identify weak points and areas for improvement, implement iterative drills, and train with experienced instructors to the edge of failure. Consultants can also assist in creating installation-specific training materials to cater to the needs of specific fire management programs. Focusing on high quality training in realistic settings, fire personnel will increase preparedness for planned and unplanned operations, promote crew cohesion and integration, and ultimately create safer and more efficient teams.

Focused Fire Trainings for Enlisted Personnel

Enlisted personnel should receive targeted fire training to better understand the relationship between range operations and wildfire risk, the ecological benefits of prescribed fire, and fire management's role in mission support. Providing training to enlisted personnel can help them understand their role in fire prevention and improve programmatic support.

Adaptive Iterations of Targeted Training Materials

Future research and development have immense opportunity for the expansion of planning and training materials that will benefit the DoD fire management programs as well as the fire management community as a whole. Once tested by fire managers and operational staff, feedback can drive future improvements and updates to all deliverables to ensure the suite is adaptive and increasingly more robust. At the strategic level, the MIDG and MIDG Matrix can evolve to include additional planning strategies and a more robust collection of existing guidance, manuals, and examples of successful in-briefing documents. Tactically speaking, future iterations of the videos and pocket cards can be expanded to include additional topics for annual refreshers and specific training for on-the-ground resources. Continuing to expand and develop these products will serve to increase preparedness, integration, and safety, with the ultimate goal of supporting the warfighter's mission-readiness.

Introduction

Wildfires are a challenge for military installations and can directly impact mission success. Wildfires can directly reduce the ability to complete missions through destruction of vegetation necessary for training, creation of unsafe conditions, and obscuration of airspace and battlespace by smoke. Wildfires also pose a threat to vital national security resources (facilities, sensors, communications, etc.).

Military training and testing ignite wildfires on installations, largely through the use of live munitions (Addington et al., 2015; Syphard & Keeley, 2015). Due to the high frequency of ignition events, installations experience a disproportionate number of wildfires relative to their size when compared to other land uses (Short, 2017). Many of these wildfires are contained through aggressive initial attack or are proactively managed through prescribed fire and fuels management, but preparedness for unplanned large-scale events remains a challenge for many installations.

Wildfire suppression and prescribed fire face similar challenges throughout the planning and response phases, in standardization of training and equipment, and in integration with the greater fire management community. These complexities include, but are not limited to widespread Unexploded Ordnance (UXO), active training and 'hot' range areas, coordinating fire operations with both traditional dispatchers and Range Control, potentially conflicted air space, secure areas, information security, and coordinating responses with incoming civilian resources and non-traditional wildfire suppression partners (i.e., enlisted soldiers carrying out ad hoc suppression duties).

As climate change increases the frequency and severity of wildfires (Abatzoglou & Williams, 2016; M. Flannigan et al., 2013; M. D. Flannigan, Krawchuk, De Groot, Wotton, & Gowman, 2009; Parks & Abatzoglou, 2020), the need for more suppression, prescribed fire, and fuels management increases (Kolden, 2019). For military installations, the reasons are multifold – to maintain training tempo, protect vital national security resources, meet natural resource objectives, sustain positive relationship with surrounding communities, and ensure public and firefighter safety. Thus it is crucial to build capacity by supporting integration with the larger fire management community and by providing targeted training and education materials targeted at both newly hired firefighters (whose previous experiences, if any, may have been in more traditional wildland fire contexts) and to outside firefighters responding to fires on military installations.

Targeted training for firefighters working on military lands remains a challenge. Although certifications and trainings are standardized through the National Wildfire Coordinating Group (NWCG), the content is targeted at traditional wildland or wildland-urban interface operating environments and does not address the unique challenges and complexities found on military installations. Department of Defense (DoD) wildland fire operations are shifting increasingly towards NWCG compliance, but many installation fire managers lack access to qualified instructors, training assignments, and training materials that reflect the needs of the military environment. The lack of targeted training that focuses on the unique fire operations environment of DoD installations puts both DoD firefighters and cooperators at increased risk, as well as reduces the effectiveness of fire management operations.

Project Description

Objectives

We developed a suite of solutions to address unique challenges faced by installation fire managers. The suite is designed to:

1. Improve integration and communication with the greater fire management community and nearby landowners

2. Support fire managers in the processes of planning and developing installation-specific in-briefings that dovetail with existing NWCG curriculum and checklists

3. Target the specific training needs of the unique military environment.

Project Description

The suite includes the following products:

Wildland Fire Training Needs on Air Force and Army Installations Survey

The needs of wildland fire managers on military installations are critically understudied. We surveyed wildland fire managers on military lands to understand their training programs and the challenges they face. This informed much of the rest of the work in the project.

Military Installation Fire Management In-briefing Development Guidebook (MIDG) and MIDG Matrix

Traditional wildland firefighting policies, standards and training do not fully address the unique challenges and complexities found on military installations. Similarly, military fire management programs are built around DoD and Branch-specific manuals and guidance particular to operations and objectives in a military environment. There is not a well-defined bridge connecting NWCG and the larger fire management community to DoD fire management programs. As such, many installation fire management programs are not well-prepared for large-scale unplanned suppression events that require cross-jurisdictional response and/or Incident Management Team involvement. For these low-probability but high-consequence events, increased preparedness is needed in the form of planning, training, and integrating with the larger fire management community.

The MIDG and MIDG Matrix aim to support new and existing fire management programs, increase planning and preparedness, improve communication and integration with the greater fire management community and local landowners, expand access to training resources and assignments, and create targeted training materials for fire resources working on military lands.

The MIDG is supported by the MIDG Matrix, which provides a checklist of key points for preparing three types of in-briefing materials based on type and level of incident. It serves as a cross-reference of existing forms, manuals, and guidance.

Wildland Fire Operations on Military Lands Refresher Videos, Military Installation In-Briefing Pocket Card, and Military Installation Fire Manager Briefing Pocket Card

These products are targeted training materials for fire personnel working on military installations. NWCG maintains a robust array of training materials and job aids including briefing checklists (such as those found in the Incident Response Pocket Guide [IRPG]) and annual NWCG refresher materials (Wildland Fire Safety Training Annual Refresher or WFSTAR). However, NWCG and WFSTAR materials target traditional wildland suppression efforts and do not expressly meet the needs of military lands. By developing refresher videos and pocket cards targeting fire operations on military lands, while simultaneously dovetailing with existing best practices, field guides, and training materials, we tailor the products to the military's unique needs while ensuring these products are easily accessible by military and non-military operational resources.

Methodology

Wildland Fire Training Needs on Air Force and Army Installations Survey

Key informant interviews were conducted with 36 fire program managers, line officers, or wildland fire training officials on military installations (50% of participants worked with the Army, 35% with the Army National Guard, and 15% with the Air Force). The survey included single-choice, multiple-choice, and short answer questions to (1) asses the composition of their fire program workforce, (2) determine key in-briefing topics for incoming civilian resources, and (3) identify additional NWCG training needs and annual refresher materials for DoD civilian employees. We administered the survey online between December 2019 and April 2020. A summary of survey results is available in Appendix A.

The survey results were used to expand upon and refine known challenges fire managers face on installations and guided the development of a suite of shared solutions to address planning complexity, develop targeted training materials, and improve communications and integrations with the greater fire management community and local landowners. The suite of shared solutions includes the MIDG, MIDG Matrix, two In-briefing Pocket Cards, and four Wildland Fire Operations on Military Lands Refresher Videos for installation fire program managers.

Military Installation Fire Management In-briefing Development Guidebook (MIDG) and MIDG Matrix

In addition to guidance from the survey, the MIDG and MIDG Matrix follow several foundational risk management principles:

1. Checklists minimize errors and benefit the risk management process by ensuring well-known crucial steps are not missed, as outlined in Atul Gawande's Checklist Manifesto (Gawande, 2010).
2. High Reliability Organization (HRO) principles form a cultural process within complex and hazardous organizations to discover and mitigate risks before they occur (Weick & Sutcliffe, 2001).
3. Lessons Learned from the greater fire management community support continual improvement and learning from past successes, near-misses, and failures.

4. Existing military and wildland fire guidance ensures regulations and best practices are followed from all angles

Additional key informant interviews with military fire management subject matter experts and federal Incident Management Team members further advised the process and content.

Wildland Fire Operations on Military Lands Refresher Videos

After reviewing the surveys, we worked with fire managers at Eglin Air Force Base and Fort Carson to develop video products. Filming took place in 2019. Interviews were conducted with installation fire management personnel and off-installation cooperators. These were edited into four video products. These products were supported with informational questions for the WFSTAR annual refresher and the in-briefing pocket cards.

Military Installation In-Briefing Pocket Card and Military Installation Fire Manager Briefing Pocket Card

Cross referencing key points in the survey, MIDG, and from the interviews at Eglin AFB and Fort Carson, we distilled the information down into accessible content for tactical field resources – for those giving and receiving briefings. The Pocket Cards follow standard practices of using the IRPG's Briefing Checklists prior to operations and are formatted to be printed as an addition to the IRPG (i.e. in sticker format).

Results and Discussions

The project identified challenges and complexities faced by installation fire managers. The resulting suite of deliverables has great opportunity to support military fire management programs to increase preparedness and improve planning, communication, integration, and ultimately safety.

More specifically, each deliverable is outlined in greater detail below:

The Wildland Fire Training Needs on Air Force and Army Installations Survey results indicated:

- Integrating installation fire management programs within the larger fire management community is key.
- Most installation fire management programs involve external agencies or cooperators (Figure 1). These external resources are less familiar with 'non-traditional' key briefing topics (such as unexploded ordnances [UXOs]), but very few installations have created in-briefing documents specific to these external, non-military audiences.
- Installation fire managers identified important topics for briefing incoming resources, including UXO protocols, natural resource considerations, communications with Range Control, active training area access, radio frequencies and protocols, etc. (Figure 2).
- Installation fire programs often utilize NWCG training materials, but significant hurdles exist to meeting training requirements and accessing qualified trainers and assignments (Figure 3).

- Strengths of on-installation wildfire training programs include the vast knowledge base of instructors, extensive experience of staff (e.g., ex-hotshots), hands-on and on-the-job training opportunities, and partnerships with external agencies.
- Installation fire managers face many challenges, some of which are unique to the military environment. These managers could be better supported by developing specific in-briefing materials and collaborating with the greater fire management community. For example, improvements to training programs on military installations could include more training on prescribed fire, suppression assignments for installation staff, and modified task books.

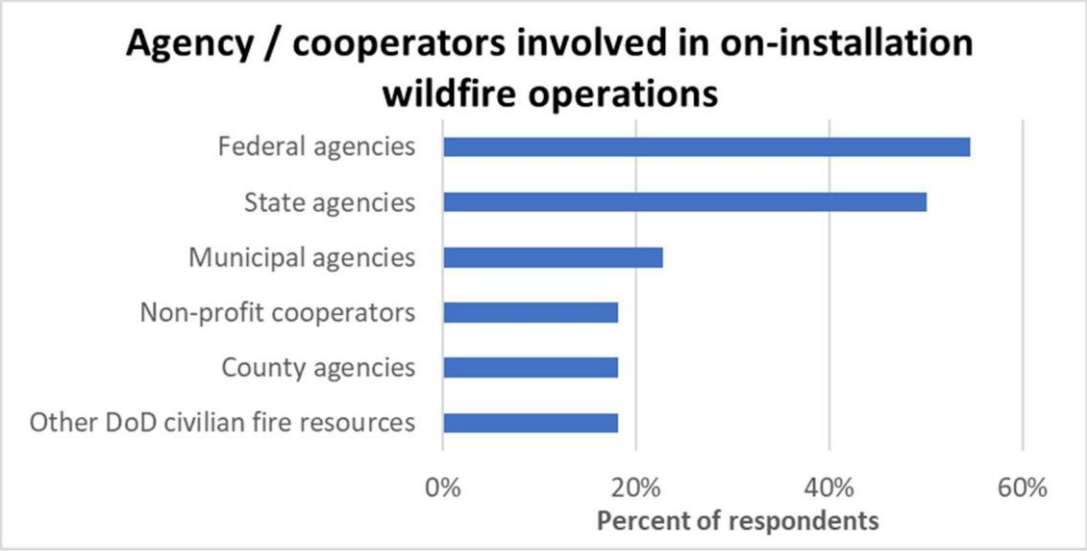

Figure 1. Installations often involve agencies and cooperators in wildfire operations, most notably federal and state agencies. 36 survey respondents are included in this data.

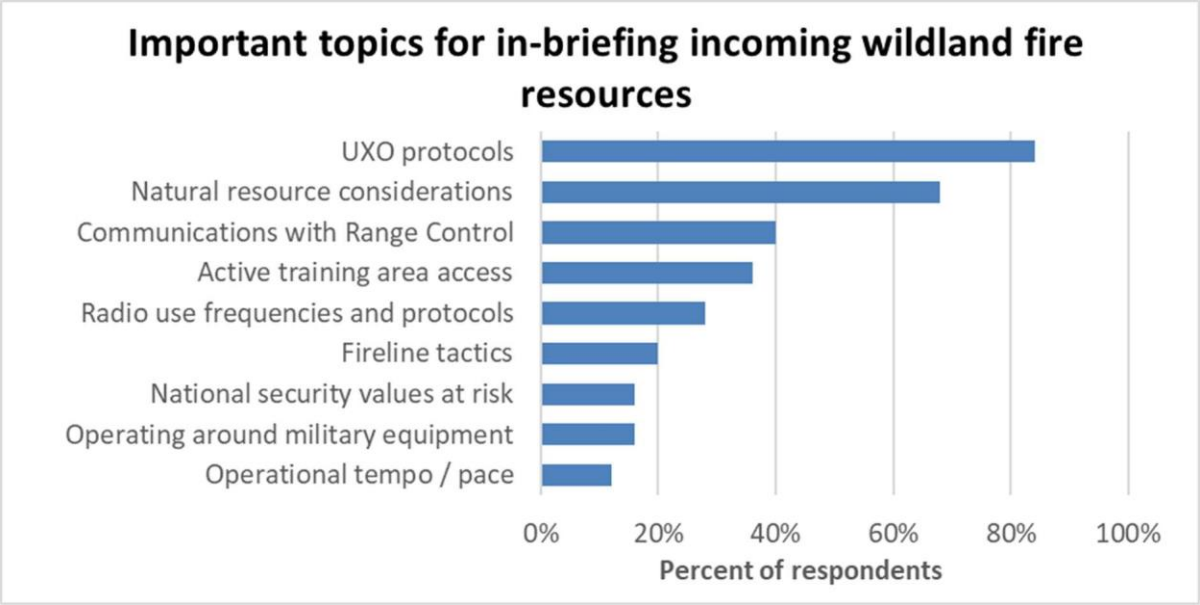

Figure 2. In-briefings for incoming wildland fire resources should cover specific topics unique to operating on military installations. 36 survey respondents are included in this data.

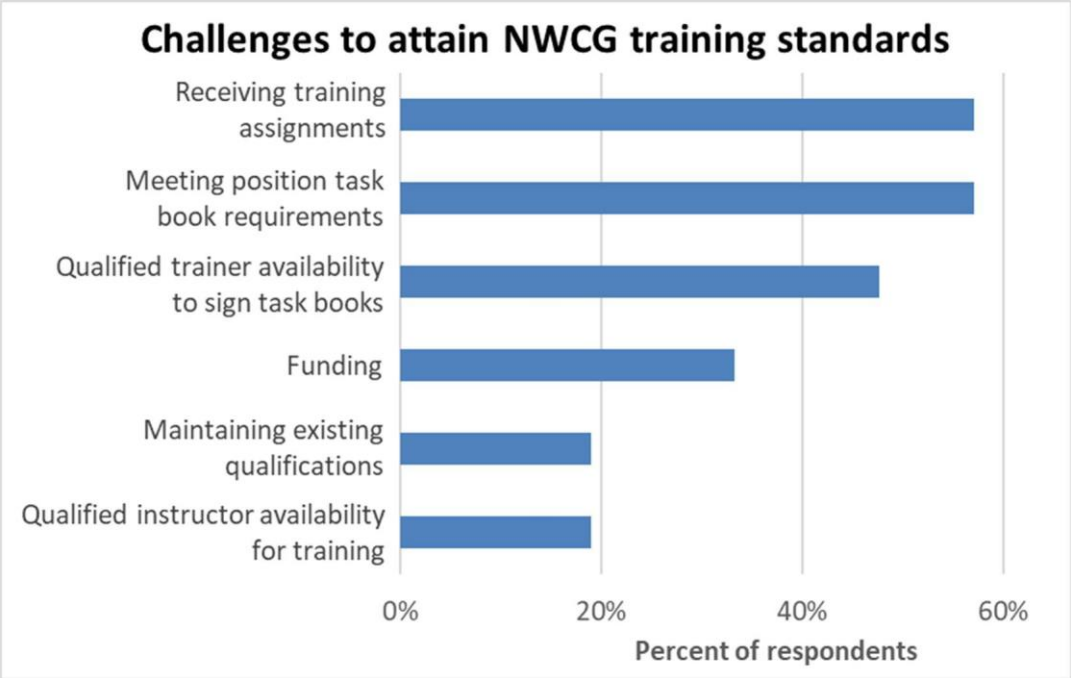

Figure 3. Installations face various challenges to attain NWCG training standards, most notably receiving training assignments and meeting task book requirements. 36 survey respondents are included in this data.

Further discussion of the survey results is included in Appendix A: Wildland Fire Training Needs on Air Force and Army Installations: Survey Results

Guided by the survey results, we developed a suite of deliverables to aid installation fire managers in 1) navigating the complex planning process, 2) developing targeted in-briefings, and 3) increasing communication and integration in the larger fire management community. In addition to providing a guidebook and matrix to navigate these challenges, we also developed videos and pocket cards which can be used by civilian and military resources for training and annual refreshers. The suite should be used by both new and existing fire management programs to build more comprehensive and safe fire management programs. The suite includes:

- The Military Installation Fire Management In-briefing Development Guidebook (MIDG) helps fire managers navigate the complex planning process and supports the development of in-briefing documents (verbal briefing, Incident Action Plan [IAP], Mobilization Guide/ In-briefing Packet) to integrate resources from the broader fire community. The MIDG improves the robustness of fire management programs by identifying key players both on and off-installation, enhances preparedness for large-scale unexpected events which may require coordinating multiple resources or cross-jurisdictional response (e.g. a suppression fire or other natural disaster), and provides a pathway to develop in- briefing materials. This also affords the installation valuable resources for planned operations on-installation (e.g. prescribed fire) and can increase access to training.

  The MIDG provides four key takeaways for installation fire managers:
  - Pre-planning is critical to ensure fire operations are safe, coordinated, and effective.

- Successful fire management programs are adaptive and integrated with installation stakeholders, cooperators, and surrounding communities.
- Collaboration and consensus are key to increasing capacity and managing the inherent complexity of fire.
- Principles of high reliability organizations (HROs) provide the foundation for, and drive the process of, producing in-briefings. Adopting HRO principles is an important organizational cultural evolution that creates capacity to discover and mitigate unexpected events before they escalate.

- The MIDG Matrix serves as a reference summary for fire managers. It is split into two parts: Part I is a summary of key takeaways for preparing three types of in-briefing materials, as well as which in-briefing materials are most appropriate for the type and level of incident (e.g. Pre-Planning stages, Conducting Planned Events, Expanding Suppression Incidents, and Transitioning Incident to an Incident Management Team [IMT]. Part II is a cross-reference of existing forms, manuals, and guidance which fire managers can reference when preparing in-briefing materials. While not a comprehensive list, the MIDG Matrix can be referenced for examples during the planning phase.

- Two pocket cards accompany the suite: 1) The Military Installation In-Briefing Pocket Card is designed to supplement the Incident Response Pocket Guide (IRPG) Briefing Checklist for incoming resources, 2) The Military Installation Fire Manager Briefing Pocket Card supplements the IRPG Briefing Checklist for fire managers who are briefing incoming resources. By supplementing the existing IRPG Briefing Checklist and dovetailing with existing NWCG protocol, the pocket cards are easily carried by firefighters for field reference.

- Four Wildland Fire Operations on Military Lands Refresher Videos round out the suite: 1) DoD Watch Out Situations, 2) Wildland Fire on U.S. Air Force Installations, 3) Wildland Fire on U.S. Army Installations, and 4) DoD Wildland Fire Operations: Six Steps for Safety. These videos address the unique hazards and challenges firefighters may encounter on military installations, help resources understand the mission of installation fire management, and mirror the information in the pocket cards. Their distribution is forthcoming through an ongoing partnership with the Bureau of Land Management.

Finally, we presented two webinars to disseminate the information and answer questions. The DoD Natural Resources Program Webinar on October 14th, 2020 included 45 natural resources attendees from DoD, the Military Service installations, federal and state agencies, academia, nonprofit organizations, and private industry. The DoD Conservation Committee Meeting on November 10, 2020, included 33 attendees from Military Service and Defense Logistics Agency headquarters and the Office of the Secretary of Defense. A post-webinar survey determining what participants learned from the event is forthcoming.

Implementation of the suite of solutions has immediate and practical applications for existing and developing fire management programs within the DoD. Existing programs can identify missing key players, improve relationships with surrounding landowners and local fire resources, and can enhance preparedness for large-scale unplanned events. Developing programs can utilize the pathways to develop in-briefing materials and better navigate the complex planning process.

The common challenges faced by installation fire management programs are opportunities for increased preparedness; better coordination and integration will produce better outcomes and safer fire programs. There is immense possibility for installation fire management programs to make impact at a large scale and be a leader in the fire management community.

Future research and development have immense opportunity for the expansion of planning and training materials that will benefit the DoD fire management programs as well as the fire management community. Once tested by fire managers and operational staff, feedback can drive future improvements and updates to all deliverables to ensure the suite is adaptive and increasingly more robust. At the strategic level, the MIDG and MIDG Matrix can evolve to include additional planning strategies and a more robust collection of existing guidance, manuals, and examples of successful in-briefing documents. Furthermore, future iterations of the videos and pocket cards can be expanded to include additional topics for annual refreshers and specific training for on-the-ground resources. Continuing to expand and develop these products will serve to increase preparedness, integration, and safety, with the goal of supporting both the warfighter's mission-readiness and natural resource objectives.

Conclusions

This project provides clear and tangible tools for improving wildfire pre-planning and prescribed fire implementation. The MIDG and MIDG Matrix are valuable tools for installation fire managers to identify and address gaps in their pre-plans and build new programs. Similarly, the videos and pocket cards provide valuable tools for not only training installation fire resources but also cooperator resources, while also increasing awareness of fire operations on military lands more generally. Furthermore, our research on training needs for installation fire managers provides a strong foundation for improving these underserved fire practitioners; improved training outcomes will lead to better management and operational success. This work has provided a substantial bridge between the broader wildland fire community and military fire management.

Military Mission Benefits

Successful fire management on military lands is intrinsically linked to improved training and testing outcomes. Military activities, whether maneuver, use of live munitions, or testing will always start wildfires. Consequently, wildfires will always in some way reduce time available for training and testing. Improved wildfire suppression and fuels management outcomes can reduce this lost training and testing time. This project provides a series of tools to aid installations in preparing for wildfires, which in turn helps reduce the impact on training and testing. These tools are applicable and available to installations across the United States.

Fire management programs implementing these tools will improve safety, effectiveness, and efficiency. Existing fire management programs can improve relationships with surrounding landowners and local fire resources, improve access to training and assignments, and enhance preparedness for large-scale wildfires. Developing programs can navigate the complex planning process, develop targeted in-briefing materials, implement nationally recognized standards, and

cultivate connections with the greater fire management community and local communities. There is immense possibility for installation fire management programs to make impacts at a large scale and be a leader in the fire management community.

Increased integration and preparedness of fire management programs directly benefits the military's mission and the warfighter's mission-readiness by maintaining testing and training tempo, protecting vital national security resources, and sustaining positive relationships with surrounding communities. Similarly, natural resources can meet their objectives of ensuring realistic habitat conditions, promoting long-term sustainability of biological resources, and minimizing undesired ecological impacts of wildfires.

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Appendix A

Appendix A: Wildland Fire Training Needs on Air Force and Army Installations: Survey Results

Survey Objectives

The Forest Stewards Guild, through Cooperative Agreement HQ00341820010 (DoD Legacy Resources Management Program), surveyed civilian fire program managers, line officers, and wildland fire training officials who work on military lands to (1) asses the composition of their fire program workforce, (2) determine key topics to include when in-briefing incoming civilian wildland fire resources on Air Force, Army, and Army National Guard installations, and (3) identify additional National Wildfire Coordination Group (NWCG)[1] training needs and annual refresher materials for Department of Defense (DoD) civilian employees.

Survey responses aided in the development of the Military Installation Fire Management In-briefing Development Guide (MIDG), MIDG Matrix, two In-briefing Pocket Cards, and four Wildland Fire Operations on Military Lands Refresher Videos for installation fire program managers.

Survey Participation

The survey was distributed through multiple channels to subject matter experts from multiple branches of the military and was voluntarily completed by 36 individuals from December 2019 to April 2020. Not all participants answered all questions, so only we report results for the 26 participants that completed at least a third of the questions on the survey.

All but one survey participants identified their current positions as fire program managers, line officers, or wildland fire training officials. These individuals worked on military installations operated by the Army (50% of participants), Army National Guard (35%), and Air Force (15%).

Key Findings

- Only a third of installations hire seasonal wildfire staff, and only a handful of these seasonal employees return for multiple seasons on the same installation. Seasonal wildfire staff are more common for Air Force and Army National Guard installations than Army installations.
- Over three-fourths of fire managers involve external agencies or cooperators with fire operations on their installation, most often federal and state agencies. However, very few installations have developed in-briefing documents for external wildland fire support resources, and verbal in-briefings are usually less than 30 minutes.
- Installation fire managers identified the most important topics for briefing incoming resources (in order of most to least important): unexploded ordnance (UXO) protocols, natural resource considerations, communications with Range Control, active training area access, radio frequencies and protocols, specific fire line tactics including Minimum Impact Suppression Tactics (MIST), operating around military equipment, military or national security values at risk, and operational tempo.

- Most (70%) installations require NWCG qualifications for civilian employees with their fire management programs. A vast majority (90%) of military installations have transitioned mostly to NWCG training materials to ensure consistency and facilitate partnerships with other agencies.
- Most survey respondents feel NWCG curriculum meets their training needs. Three-fourths of installations use NWCG online curriculum to teach Firefighter Training/Introduction to Wildland Fire Behavior (S-130 / S-190) and Wildland Fire Safety Training Annual Refresher (WFSTAR) materials for their annual fire refresher.
- Strengths of on-installation wildfire training programs include the vast knowledge base of instructors, extensive experience of staff (e.g., ex-hotshots), hands-on and on-the-job training opportunities, and partnerships with external agencies.
- Many installations face challenges with attaining NWCG training standards, specifically meeting task book requirements, receiving training assignments, and accessing qualified trainers.
- Potential improvements to training programs on military installations include more training on prescribed fire, suppression assignments for installation staff, and modified task books.

Purpose and Composition of Wildfire Programs on Military Installations

Prescribed fire and wildfire suppression are the focus of 85% of fire management programs on military installations managed by survey participants, with the remaining programs focused on prescribed fire. A majority (70%) of programs have seven or more full-time staff, and only 20% of programs have small staffs of one to two individuals. Air Force and Army installations tend to have larger full-time staffs for their wildland fire programs than the Army National Guard.

About 30% of installations have seasonal wildland fire staff that vary from one to three seasonal employees and up to eleven or more seasonal employees. Only a handful of these seasonal employees return for multiple seasons on the same military installation. All survey respondents with the Air Force report that their installations hire seasonal wildfire staff, whereas all respondents with the Army report that their installations do not. About 45% of respondents from the Army National Guard report hiring seasonal wildland fire staff.

Engagement of Off-Installation Resources in Wildfire Operations

About 80% of survey respondents reported engaging external agencies or cooperators with fire operations on their installations. About half of these installations work with the same organizations repeatedly for on-installation wildfire operations. Installations involve federal agencies and state agencies more often than other types of cooperators (Figure 1).

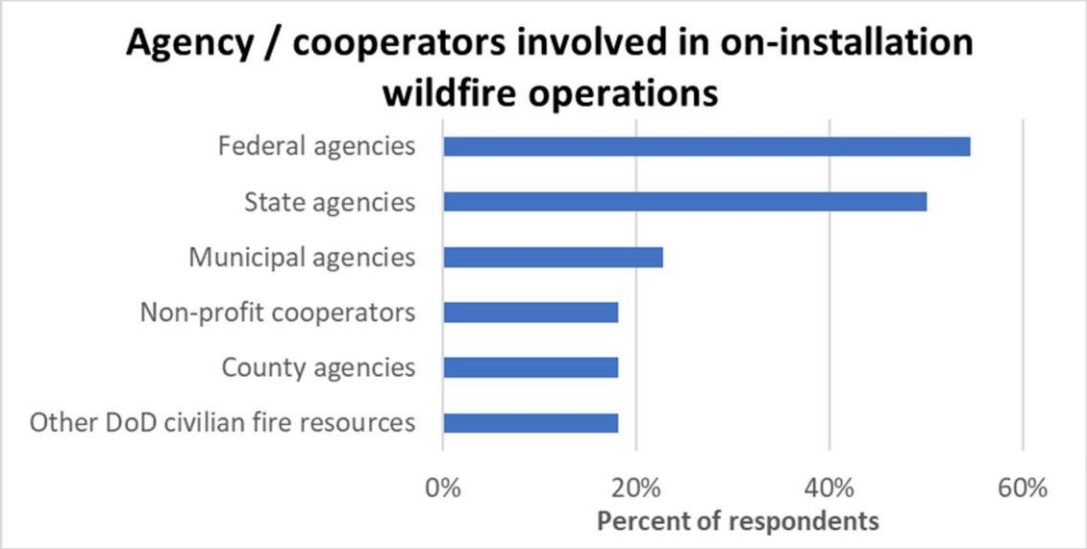

Figure 1. Installations often involve agencies and cooperators in wildfire operations, most notably federal and state agencies.

External cooperation is more common for Air Force and Army National Guard installations than Army installations. One respondent commented that their Army installation does NOT utilize external agencies or cooperators due to specialized training they require internal staff on unexploded ordinances and depleted uranium.

Even though external wildland support resources often participate in on-installation fire operations, very few installations (15%) have developed in-briefing documents for these external resources. Verbal in-briefings for incoming wildland fire resources are usually 30 minutes or less. Only a handful of respondents from the Air Force and Army National Guard reported longer briefings.

Installation fire managers identified the most important topics for briefing incoming resources (Figure 2). Over a third of respondents listed unexploded ordnance (UXO) protocols, natural resource considerations (e.g., threatened and endangered species, invasive species, management objectives), communications with Range Control, and active training area access as important in-briefing topics. One respondent commented that in-briefing topics depend on the type of activity (prescribed fire or wildfire suppression) as well as the team's organization, mission, and communication.

In general, incoming resources were considered least familiar with UXO protocols, communication with Range Control, and active training area access and most familiar with fire line tactics and radio use frequencies and protocols.

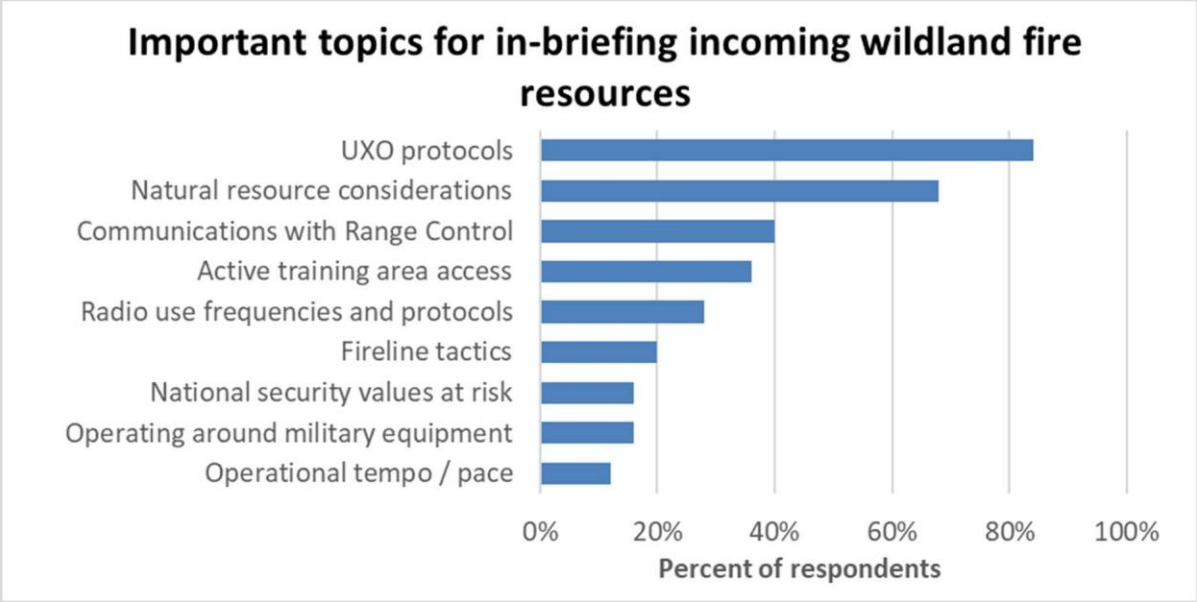

Figure 2. In-briefings for incoming wildland fire resources should cover specific topics unique to operating on military installations.

Training and Qualification Standards for Wildfire Programs on Military Installations

About 70% of installations require NWCG qualifications for civilian employees with their fire management programs, and a vast majority (90%) of military installations have transitioned to NWCG training materials. It is less common for Army National Guard installations to require NWCG qualifications for their on-installation training programs and civilian employees than Army and Air Force installations.

Over three-fourths of installations use NWCG online curriculum to teach Firefighter Training/Introduction to Wildland Fire Behavior (S-130/190). Many installations (60%) use online training for additional NWCG courses, particularly Crew Boss (S-230) and Intermediate Fire Behavior (S-290). One-third of installations have staff that can instruct advanced NWCG courses, such as Wildland Fire Chain Saws (S-212), Portable Pumps and Water Use (S-211), Firing Operations (S-219), and Crew Boss/Engine Boss (S-230/231). Other installations utilize training experience and opportunities with external partners, such as the U.S. Forest Service or state agencies.

Almost three-fourths of installations use Wildland Fire Safety Training Annual Refresher (WFSTAR) materials for their annual fire refresher. Over half of installations (57%) require annual all-staff training in addition to NWCG required annual training (RT-130). All respondents from the Army National Guard and Air Force reported training periods of three shifts or less, whereas 50% of respondents from the Army reported longer training periods of one week or more. A majority (60%) of installations require training for wildland fire staff specifically related to military lands, such as training on UXOs, depleted uranium, range locations and access, and engine tactics on ranges. Some installations offer training in medical response, emergency vehicle operation, UTV/ATV operation, leadership skills, and dispatch communication.

A vast majority (82%) of survey respondents feel NWCG curriculum meets their fire program's training needs. Strengths reported by respondents about their training programs were the vast knowledge base of their instructors, extensive experience of staff (e.g., ex-hotshots), hands-on and on-the-job training opportunities, and partnerships with external agencies. Several respondents noted that the Joint Training Academy is a strength for the Army and Air Force and should be used as a national model.

Some wildland fire programs face challenges with attaining NWCG training standards (Figure 3). Nearly 60% of respondents reported that they or their staff struggle with meeting task book requirements and receiving training assignments, and about half of respondents said qualified trainers are not readily available to sign task books. Funding was a concern more often for respondents from Army installations than from Air Force or Army National Guard installations. Only one-fifth of respondents expressed challenges related to the availability to qualified instructors for training or challenges with maintaining existing qualifications.

Additional challenges include time limitations for staff that have fire as a collateral rather than primary duty, exclusion from Incident Qualifications and Certification System (IQCS) and interagency dispatch (i.e., IROC), and inability for some staff to meet fitness requirements. Installations that do not have dedicated wildfire staff face additional challenges with funding and prioritizing fire management activities and training.

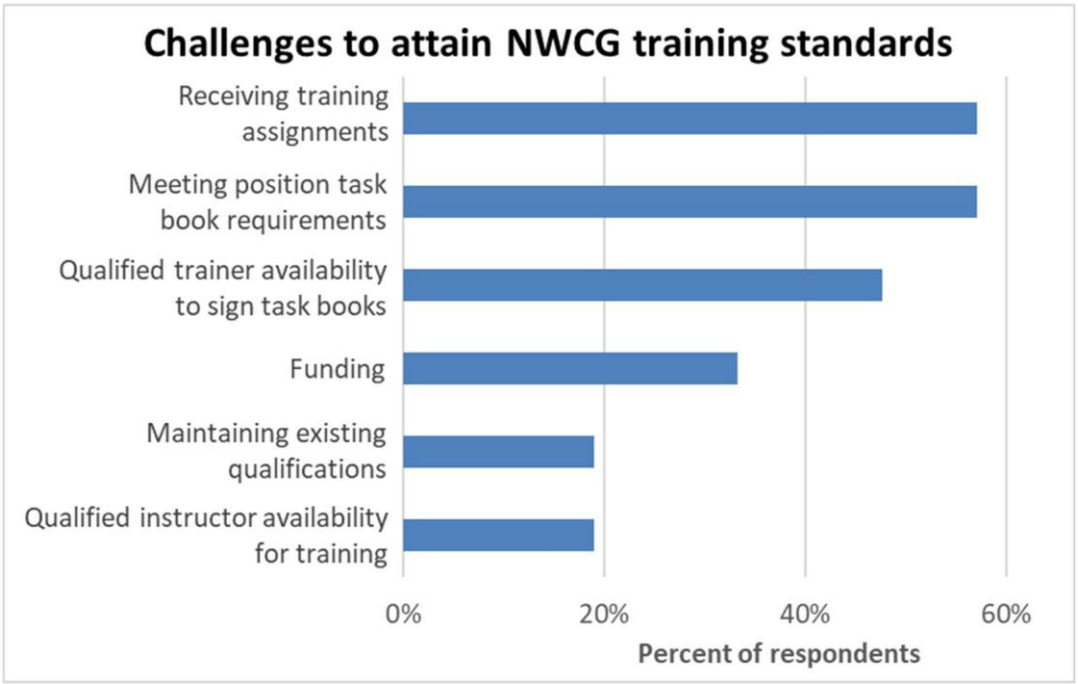

Figure 3. Installations face various challenges to attain NWCG training standards, most notably receiving training assignments and meeting task book requirements.

Suggestions for Improvement

Respondents provided suggestions for how to improve their wildfire training programs:

- □ More curriculum focused on prescribed fire training rather than wildfire suppression, particularly hands-on training
- □ Regionally specific curriculum (e.g., fire behavior and fire line tactics for the southeastern U.S.)
- □ More training on medical response, including CPR/First Aid, mock medevac scenarios, quarterly fire safety refreshers, etc.
- □ More training on equipment maintenance
- □ Simplified version of the NWCG Prescribed Fire Plan and/or different templates for different regions
- □ Intermediate positions leading to Prescribed Burn Boss (RXB) with more accessible task book requirements
- □ Modified task book so prescribed fire operations meet training requirements for positions like Incident Commander Type 4 (ICT4)
- □ Greater availability of blended (online/in-person) courses
- □ More suppression assignments for installation staff with federal and state agencies
- □ Shorter fire assignments (3-5 days) to facilitate staff participation
- □ Dedicated funding and staff time for the installation's fire management program