

FY 2008

SECRETARY OF DEFENSE ENVIRONMENTAL AWARDS
Environmental Quality Award – Overseas Installation



nominee: **ASCENSION AUXILIARY AIRFIELD**
PATRICK AIR FORCE BASE

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Open, undeveloped, lands comprised of volcanic rock, lava flows, and cinders surround Ascension AAF. These areas flourish with grasses during May/June if rain is plentiful but are sparsely covered with dormant grasses and small shrubs during the remainder of the year.

MISSION STATEMENT

"To assure access to the high frontier and to support global operations." In support of these mission objectives, the 45th Space Wing and Ascension AAF provide technical support for space lift and space flight operations as authorized by Air Force Space Command.

COMMUNITY

There are three communities on Ascension other than the U. S. Base. These are the British settlements of Georgetown, on the western shore; Two Boats Village, near the geographic center of the island; and the Royal Air Force (RAF) Camp at Travelers Hill, just south of Two Boats. Most of the island residents from these communities are from the United Kingdom and St. Helena. Cable and Wireless, Merlin Communications (formerly British Broadcasting Corporation), Ascension Island Government, SerCo, Composite Signals Organization (CSO) and the British Military forces are among the island's organizations.

Ascension Auxiliary Airfield is a remote spacecraft tracking station and airfield of 3,449 acres on a British island in the south Atlantic Ocean between Africa and South America. The installation is the southern terminus of the 45th Space Wings eastern range, providing tracking, telemetry, and command instrumentation for DoD, commercial, and NASA spacecraft. The island is volcanic in nature and is made up of the remnants of 49 volcanoes, roughly 34 square miles, and is 1.5 million years old. The terrain consists of hills, rugged mountains, cinder cones, and lava flows of volcanic rock. The majority of the land use on Ascension is undeveloped open space, followed by base support (industrial), operations, telecommunications, outdoor recreation and administrative land uses. There are no categories of unique lands or activities at the Station that require special land use designations; however, there exist special areas of environmental concern (i.e., bird nesting areas, protected vegetation, and turtle hatching areas) which are remote from the Main Base.



The island population is approximately 1,000. There are approximately 300 personnel on the U.S. installation. The remaining 700 personnel are employed or supported by the host nation.



HISTORY

Ascension AAF is located on land occupied under the terms of an agreement between the 45th Space Wing and the Government of the United Kingdom (UK), and is listed as 45th Space Wing Leased Property. The U.S. Army Air Corp constructed the airfield in 1942. By 1943, approximately 4,000 American servicemen were on the island and remained until 1947. Cable and Wireless (a British company) obtained possession of the airfield at that time. The island population fell to 170 people. The Americans returned in 1957 to reopen the airfield and establish the Main Base. The National Aeronautical Space Administration (NASA) built an installation in 1966. Two Boats Village was completed the same year. The NASA station closed in 1990 and the Ariane Rocket Station opened the same year.

On October 1, 1990, Air Force Space Command assumed responsibility for U.S. Air Force space launch operations and on November 12, 1991, the Eastern Test Range was inactivated and the Eastern Range was activated as a result of restructuring throughout the Air Force. The 45th Space Wing, a component of the 14th Air Force at Vandenberg Air Force Base, CA, currently oversees the Eastern Range. Ascension AAF has one active 10,000-ft long and 150-ft wide runway. The operation and maintenance of the runway is shared with the Royal Air Force.



Ascension Spurge

FLORA

The majority of the 300 or so plant species found on Ascension Island today have been introduced by humans in the past two centuries. Records of plant life by the earliest visitors to Ascension are scarce, but approximately 25 species are indigenous. Of these, ten are endemic to Ascension. Four of these have not been recorded for a number of years and are extinct. Most of the extinctions are due to the inability of the native species to compete with the more vigorous introduced species. The Ascension Spurge (*Euphorbia organoides*) is found on the island in dry ash plain and lava habitats. The population is located on the slopes of South Gannet Hill, Cotar Hill and Round Hill Wig Hill, Letterbox, Razors Edge and Spire Beach. The USAF in conjunction with the University of Edinburgh, Scotland has completed several projects related to surveys and propagation of Ascension Spurge The

Ascension Spurge is the only endemic plant found on AF leased property and approximately 98% of the population is located on AF property. The status of this plant is endangered.

The only endemic plant species known to occur on the Ascension AAF leased land is the spurge *Euphorbia organoides*. The spurge has a total known population of about 2,000 plants, sparsely scattered throughout the island with 98% of the population growing within the bounds of the Air Force leased land. Very little is known about the ecological characteristics that allow Spurge to survive at any one particular site. Additional data on the climatic conditions will be collected in conjunction with the host nation to attempt to ascertain the optimum climatic conditions for growth and propagation on a comparable site basis on Ascension Island to ensure the conservation and survival of Spurge on Ascension.



Ascension Spurge Lining Roadway

FAUNA

Ascension Island is one of the most significant breeding places for seabirds in the south Atlantic. It holds the only breeding site in the world for the critically threatened Ascension Frigate bird and important colonies of ten other species. Ascension was discovered in 1501. Shortly after its discovery, black rats were accidentally introduced to the island from European sailing ships. Feral cats were introduced to the island to control rats in the 19th century. They had a major influence on the size and composition of seabird communities on the island and hence throughout the tropical Atlantic Ocean.

The efforts of the Ascension Island Government and the Station have, from the recent surveys, eradicated feral cats from the island. Rats are a restrictive factor for the re-colonization of the main island by seabirds. Rats and cats, both of which were alien to Ascension Island, have now devastated its natural wildlife. The two native land bird species, a rail and night heron, are both extinct, and

the huge seabird colonies that were once found on the mainland are now largely restricted to offshore stacks that have remained free of cats and rats. The largest of these, Boatswainbird Island, is the only place in the world where the endemic Ascension Frigatebird breeds.

Ten additional species of seabird breed on Boatswainbird and Ascension Island. The most numerous of these is the sooty tern, or 'wideawake', the only seabird to still nest in large numbers on the mainland. The sooty tern colonies or 'wideawake fairs' support colonies totaling about 150,000 pairs, but even these colonies are much reduced compared to historical levels.

Ascension is one of the most remote oceanic islands in the world. Each year between 6,000 and 15,000 nests are laid by the endangered Green Turtle (*Chelonia mydas*) making this the second largest nesting colony of this species in the Atlantic Ocean, the largest being Costa Rica. The

green turtles that nest on Ascension Island are the largest of this species in the world, being approximately 1.5 meters in length and 150 - 300 kg in weight. They are also unique in that males and females migrate from Brazil where they feed, to Ascension Island to breed and, in the case of females, lay their eggs. They then return to Brazil and repeat their migration every 3 - 4 years. The method by which they find this small and remote island is not fully understood, and is considered one of the most amazing navigational feats of all species in the animal kingdom.



Sooty Terns



Intensely Nested Air Force Beach



Green Sea Turtles

ENVIRONMENTAL MANAGEMENT SYSTEM

The goals, management, training, and other aspects of the Environmental Management System (EMS) are all embodied in 14 management plans and 51 ISO compliant procedures specifically developed for Ascension AAF. All of these plans and procedures are reviewed annually to evaluate effectiveness and fine tune the goals and objectives. This review process drove a tailoring of the latest contract performance work statement, matching diverse requirements in various plans. For example, unique language was incorporated requiring a 10% areal annual reduction of invasive acacia and Mexican thorn.

Every person visiting or permanently stationed at Ascension Auxiliary Airfield receives some level of environmental training whether it's just a briefing for short time visitors or a much more involved training covering cultural, natural, hazardous, toxics, and other environmental concerns such as general awareness level, spill response, lead workers and supervisors, asbestos, and hazwoper.

The host nation has become an integral part of the EMS in that both the host nation's environmental program and the Air Force routinely combine resources to recycle materials, target invasive species or pests, or to monitor wildlife status and viability. Station management, including the environmental team leader, meet with Ascension Island Government and Royal Air Force senior leaders on a monthly basis, or more often if there are issues that need resolution. As an example of the pro-

grams effectiveness, there have been no hazardous waste discrepancies in the complex hazardous waste marine shipments from Ascension stations to Port Canaveral with transshipment to CONUS disposal facilities. This is one of the most potentially litigious activities of the 45th Space Wing and AFSPC



PCB Removal from Radar



Aerosol Can Puncturing and Fluorescent Lamp Crusher

POLLUTION PREVENTION

The pollution prevention opportunity and energy conservation assessments have resulted in a number of improvements in all media areas, such as the use of passive cooling techniques in roofs, improved air conditioners and insulation, and solar water heating panels on almost every dormitory. A cold water main base laundry using modern biodegradable detergents allowed an old oil fired, asbestos encased boiler to be permanently removed. Efficient compact fluorescent bulbs and motion detectors have reduced energy consumption and costs.

The use of spiral wound batteries in vehicles continues to be a successful initiative. These batteries cost twice as much as conventional batteries but last three times longer. Centralized hazardous material supply reduced storage requirements and \$15K/yr in shelf life expirations. The expanding use of metalizers and non-hazardous paints has reduced hazardous waste disposal costs by about \$10K/yr. Metals are segregated in the construction and demolition debris landfill for future recycling efforts.



Metallizer Applying Molten Zinc Plasma

WASTE REDUCTION EFFORTS

Reduction of the amount of hazardous waste generated is a fundamental goal of Ascension AAF Waste Management Strategy. Some considerations for achieving this goal are listed below:

1. The careful ordering of hazardous materials to match the quantity used to quantity ordered.
2. Incorporate the approved 45th Space Wing tracking system to manage hazardous materials efficiently on Station.
3. Determine an alternate use for excess materials. Suggested uses include, but are not limited to, the following:
 - Return costly excess new materials to supplier
 - Dispose of new products through resale or free issue through DRMO or PAFB HAZMART to avoid costly retrograde shipments.
 - Use materials through self help projects
 - Donate material to local organization or groups with Commanders or contracting permission.



Old POL Tank Recycled to a Wastewater Plant Pretreatment Basin

Many buildings at Ascension AAF were constructed and were maintained using asbestos containing materials, PCB containing paint, lead-based paint, and zinc chromate primer. Products containing toxic materials are no longer purchased; however, past use of these materials has created a need to properly manage, abate, and dispose of these materials to safeguard human health and the environment. The Ascension environmental technician maintains several databases identifying the locations, sampling, and history of abatement in support of maintenance and construction projects.

Concrete rubble, some dating to WWII, was used to widen the Ascension Island runway so it can be used by 747 aircraft!



PCB Removal from Radar



Windmills at Ascension are a Major Contributor to Pollution Prevention

ENVIRONMENTAL COMPLIANCE ASSESSMENT AND MANAGEMENT PROGRAM

Ascension Auxiliary Airfield, in conjunction with the 45th Space Wing's Environmental Flight, conducts an internal assessment every year with an external assessment every third year. Findings and associated work orders and projects are tracked using the CADET system. The status of open findings and available funding is analyzed at quarterly Environmental Protection Committee meetings that include the Base Commander, senior contractor management, and 45th Space Wing's Environmental Flight. Training on how to perform an ECAMP inspection is done largely in an on-the-job manner.

EFFECTIVE USE OF FUNDS

Proactively contracted with two long-term former station managers to complete an environmental review (as part of the NEPA process) of a proposed airfield renovation and expansion project. Their combined 40 years of experience in managing an overseas installation resulted in a thorough analysis of the project including discovery of WWII airplane crash sites that had been lost in time. Cost savings resulted from more efficient use of already available fill material and erosion control considerations.

About 40 drums per year of used oil are generated by the station. An agreement was forged with the British Merlin Communications desalination plant that eliminates shipping used oil to CONUS for disposal. This results in a cost savings to the USAF of \$4K per year and Brits get 2,000 gallons of heating oil.

Using trained and certified in-house abatement to remove thousands of square feet of asbestos materials, lead-based and chromate-containing paint has saved, during the report period alone, about \$80K versus contracting the service out.

Termites are a major problem at Ascension. Rather than never ending tenting and fumigation, the effort turned to utilizing non-wood products such as metal studs or wood treated with borate. A new innovative technology of killing termites by heating the entire structure is shown below.



Thermal Termite Treatment



Thermal Termite Treatment Equipment

COMMUNITY RELATIONS (OVERSEAS)

The Station works with the Ascension Island Government conservation office on a variety of issues: rabbit survey, rat control, spurge and fern propagation, invasive species control, marine mammal survey, beach cleanups, and restoring cultural resources.



Community Beach Cleanup



WWII Hydroponics Garden after Community Effort to Remove Damaging Acacia

Certain historical and/or archaeological constraints have been identified on Ascension. Auxiliary Air Field sites and on nearby British land. Among the identified resources on the Station is a WWII tent city that was located east of the powerhouse. The Catholic Grotto Dates back to the World War II era and was recently refurbished by the USAF.



Catholic Grotto



Catholic Grotto at Rededication Ceremony

Environmental Planning and Analysis

(Overseas only, E.O. 12114, "Environmental Effects Abroad Of Major Federal Actions")

During the evaluation period \$12M worth of projects were analyzed under the environmental impact analysis process to include erosion and termite control, passive cooling, energy conservation, water conservation and bird nesting habitats. Project designs now consider earth tremors, increasing rainfall, and spreading invasive vegetation.

Through the environmental planning function, a study was initiated that determined two giant antennas were no longer needed, saving the Air Force \$300K in antenna refurbishment costs. Further, the fine wire mesh of these antennas was killing as many as 660 birds a month from the recently burgeoning sooty tern population. The destruction of birdlife by these antennas was a particularly sore point with the host nation's conservation community.

The Final Environmental Governing Standards for Ascension Island contain some provisions for pre-filtering of the seawater that feeds the flash evaporation desalination plant. These requirements basically constitute a major redesign and re-engineering of the feed water system. Instead, the design team went to work and realized that the fuel hungry flash evaporation system was nearing the end of its operational life and that funds could be better spent by installing a reverse osmosis system that meets the FGS requirements. Better yet, the reverse osmosis system will save almost \$1M per year in expensive overseas fuel and it will pay for itself within three years.



Antennas.



A Flock of Sooty Terns



A Wounded Sooty Tern.

MITIGATION MEASURES

By employing the world's leading expert on Ascension Spurge and partnering with the host nation's Conservation Group, several plots of Spurge like the one depicted below (note the fence to keep out donkeys and sheep) were established to ensure the continued survival of the species.



One of the world's rarest plants, Ascension Spurge, was threatened by the need to repair eroded roads.



Ascension Spurge Preservation Efforts.