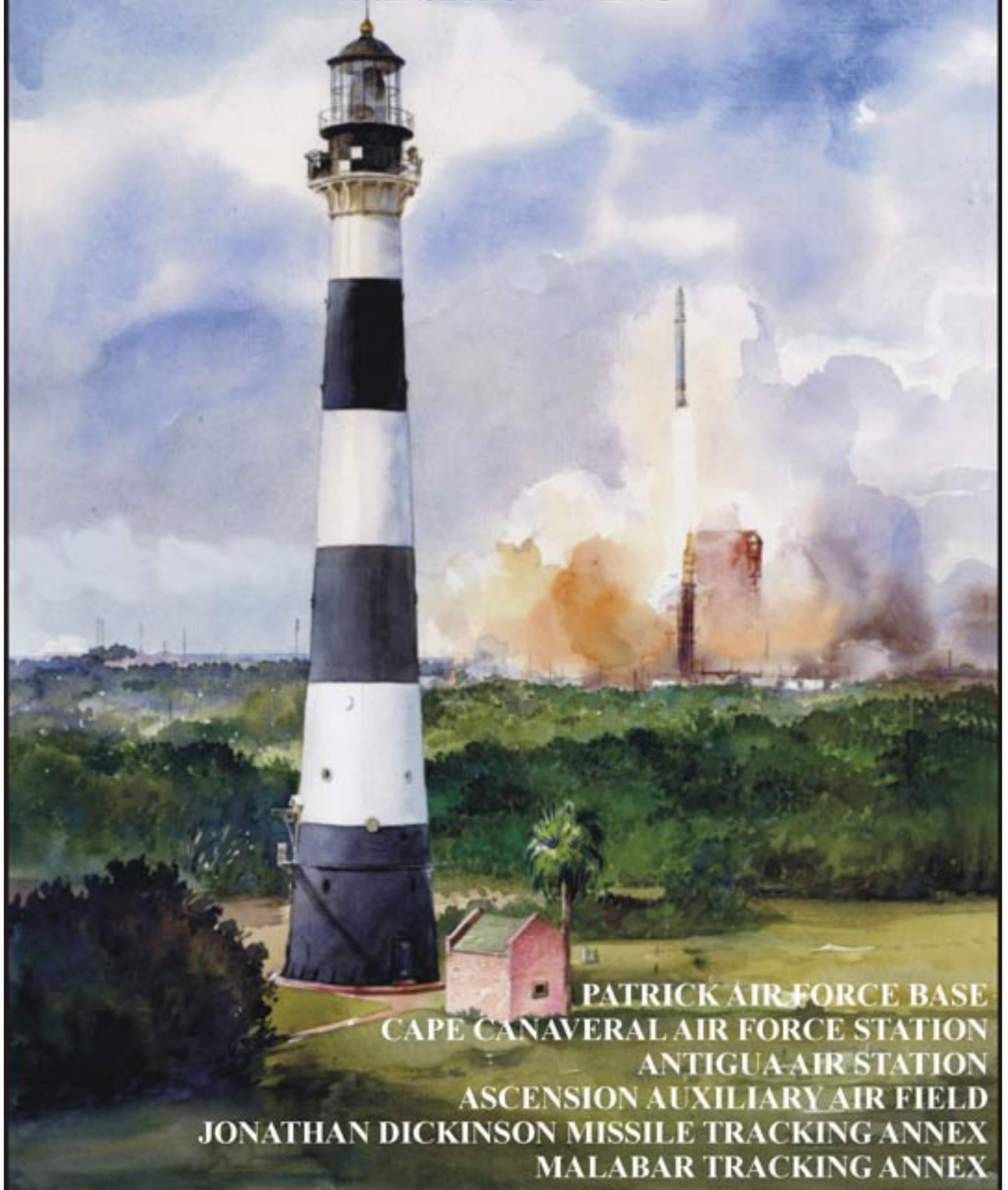


**2003 SECRETARY OF DEFENSE  
CULTURAL RESOURCES MANAGEMENT AWARD  
45th SPACE WING**



**PATRICK AIR FORCE BASE  
CAPE CANAVERAL AIR FORCE STATION  
ANTIGUA AIR STATION  
ASCENSION AUXILIARY AIR FIELD  
JONATHAN DICKINSON MISSILE TRACKING ANNEX  
MALABAR TRACKING ANNEX**

**2003 SECRETARY OF DEFENSE  
CULTURAL RESOURCES MANAGEMENT AWARD  
45<sup>TH</sup> SPACE WING, PATRICK AIR FORCE BASE, FLORIDA**

**INTRODUCTION**

Along Florida's Space Coast where the vast Atlantic stretches east, the journey to space began decades ago and continues today. The work of the 45<sup>th</sup> Space Wing (45SW) combines advanced space technology and a rich cultural history.

Headquartered at Patrick Air Force Base (PAFB) and nearby Cape Canaveral Air Force Station (CCAFS), the wing has been the backbone of the nation's space program for more than 50 years. Cape Canaveral is the nation's only facility able to launch satellites into equatorial orbit.

The 45SW serves as the East Coast spaceport, providing the Air Force's (AF) critical contribution to a lean, yet effective national defense force. An integral part of the nation's defense, the wing supports air and space superiority, global attack capability, rapid global mobility, precision engagement ability, information superiority and agile combat support and rescue.

The 45SW prepares satellites for launch on a variety of expendable space launch vehicles. The wing's global importance is underscored by the 3,320 space launches to date with 29 launches and 6 space shuttle landings in the last two fiscal years.

The Eastern Range supports the various space programs of the Air Force, Army, Navy, NASA's space shuttle, foreign governments, the European Space Agency and various commercial space activities.

The 45SW's responsibilities are far-reaching. The wing's Eastern Range

encompasses 15 million square miles and includes 15,800 acres at CCAFS, 2,108 acres at PAFB and extends more than 10,000 miles from Argentia, Newfoundland to the South Atlantic. Facilities also include 652 acres of tracking sites in Florida at the Malabar and Jonathan Dickinson Missile Tracking Annexes and 4,087 acres at downrange sites at Antigua Air Station and Ascension Auxiliary Airfield.

Coupled with the 45<sup>th</sup> Space Wing's primary mission of enhancing national strength by ensuring access to space, all 2,327 active duty, 1,555 civil servants, 6,349 contractors and more than 35 tenant units are committed to environmental excellence.

Five dedicated professionals, reporting to the 45<sup>th</sup> Civil Engineer Squadron's Environmental Flight, manage cultural resources at the myriad of 45SW facilities.

**BACKGROUND**

Few military installations play as significant a role in our country's defense and national security as the 45SW. This role includes a conscientious plan to protect and preserve historical, archaeological and Native American artifacts.

Previous archaeological investigations at CCAFS yielded 51 archaeological sites, including 13 eligible sites for the National Register of Historic Places (NRHP). Architectural and historical studies completed in the early 1980s resulted in designation of CCAFS as a discontinuous National Historic Landmark (NHL) District consisting of five launch complexes, the Launch Complex (LC) 13 Mobile Service Tower and the original Mission Control Center. Other studies identified six additional launch complexes and the Cape Canaveral Lighthouse as eligible for NRHP listing. Patrick AFB has not identified any archaeological sites; however, it has been

Major Resource Features	
Resource	National Register Status
Man-In Space NHL (7 discontinuous sites)	National Register Listed
Early Space Program (8 launch complexes and Hangar C)	Eligible for Listing
Cape Canaveral Settlers (Lighthouse and Stinktown)	Eligible for Listing
Native American Sites (13 Ais Indian Archaeological sites)	Eligible for Listing
World War II Era (7 Facilities at PAFB)	Eligible for Listing

Cultural Resources Plan Components and Agreements	
Title	Prepared/Revised
Patrick AFB Component	Dec 2001
Cape Canaveral AFS	Dec 2001
Malabar Annex	Dec 2001
Jonathan Dickinson Missile Tracking Annex	Dec 2001
Ascension Auxiliary Airfield	Sep 2000 (New ECD Mar 04)
Antigua Air Force Station	Jun 2000 (New ECD Mar 04)

the subject of architectural and historical studies with eligibility recommendations.

The environmental setting of the 45SW is nearly as distinctive and multifaceted as its mission. This setting, along with the many cultural resources, provides unique challenges in maintaining the fragile balance between hazardous rocket operations and rare historical artifacts. Patrick AFB and Cape Canaveral AFS cover nearly 23,000 acres of sandy beaches, coastal sand dunes, wetlands, coastal strand scrub and woodlands. Located on a barrier island in central Florida between the Banana River and the Atlantic Ocean, it is mostly undeveloped coastal land that ensures restricted access and provides a safety zone for space launches.

**PROGRAM SUMMARY**

The overall objective of the 45SW’s environmental program is to support the wing mission of assured access to space while protecting and preserving history and the environment.

The 45SW conquers this monumental responsibility and meets challenges through proactive management of a uniquely intricate cultural resources management program.

Archeological sites, buildings and structures that made important contributions to

history, architecture, archaeology, engineering and culture are maintained. Specific strategies are included in the Cultural Resources Management Plan (CRMP).

General goals and cultural resource planning objectives for the installations include:

- incorporating the CRMP into the CCAFS General Plan per AFI 32-7065 [complete];
- complying with cultural resource legislation; managing cultural resources in an effective manner including early consideration in project planning and streamlined processes that result in minimum project delay [ongoing];
- reviewing 45SW regulations/policies to determine if they are conducive to preservation and revising those policies to incorporate cultural resource concerns [ongoing];
- increasing wing-wide awareness of its heritage through education about significant historic resources, and when security permits, accommodations and interpretation of significant resources should be increased, [ongoing].

The most outstanding features of the 45SW cultural resources program are the monumental accomplishments resulting from the outstanding ability to remain aggressive stewards of history while supporting the highly technical space mission given the unique environmental considerations at six facilities located thousands of miles apart.

Wing collaboration with the Antigua and British governments, through host-tenant support agreements at Antigua and Ascension islands adds a special dimension to the program.

Supporting the program is the wing's Environmental Management System. This overarching management tool ensures environmental actions are considered early in every wing decision. Wing leadership is well-versed and educated on historical and archaeological resources. The Space Allocation Board considers cultural resources in every facility reuse decision ensuring historic integrity is maintained.

A strong commitment to environmental excellence keeps the 45SW in compliance with federal, state and local laws and regulations. Environmental personnel review thousands of proposed actions under the Environmental Impact Analysis Process (EIAP).

Repeatedly recognized for outstanding achievement, the 45SW's mission of environmental stewardship, and compliance with legal requirements, shapes its cultural resources goals. The program does not just "meet statutory and regulatory requirements" but always "goes the extra mile." Personnel continually seek better, more efficient ways to accomplish tasks and meet challenges through innovative technologies and partnering.

## **ACCOMPLISHMENTS**

### **Overall Management**

The 45SW diligently protects historic architecture while seeking cost and time-effective methodologies.

A contracted survey in 1993 determined 88 buildings on PAFB were eligible for NRHP listing. Eligible facilities must be preserved and the Florida State Historic Preservation Office (SHPO) must be consulted prior to any undertakings that may affect historical integrity.

The National Historic Preservation Act (NHPA) requires evaluations for effect or no

effect. These evaluations revealed that many of these facilities did not meet the criteria defined in the 1993 report. Buildings were then reevaluated on a case-by-case basis to make proper determination of eligibility.

After completing an evaluation of 13 buildings, the team spearheaded a contract for a comprehensive evaluation of the 75 remaining buildings. Due to this effort, the team determined only 15 of the original 88 buildings now require extra protection thus allowing them to focus resources on those facilities.

Charting the unknown sites, a rigorous, comprehensive, Phase I survey of the cultural resources management plans for Antigua Air Station and Ascension Auxiliary Airfield was completed. This survey identified and delineated several previously unknown settlement sites. Findings were documented using paper, film and state-of-the-art Global Positioning System (GPS) equipment. The GPS data was subsequently transferred to the Geographic Information System (GIS).

This GIS cultural resources map, literally hours old, was used to route a new antiterrorism perimeter fence around culturally sensitive areas at Ascension AAF. The investigation further revealed a network of seashore paths on Ascension and hut foundations used by British "turtle-turners" in the early 1800s. Evidence of World War II tent cities and other permanent structures was found at several previously unknown locations.

An exotic vegetation control program cleared impenetrable thickets of acacia at Antigua AS enabling the cultural resources survey to be performed in conjunction with Antigua government staff archeologists. These surveys affirmed a long-held belief that the



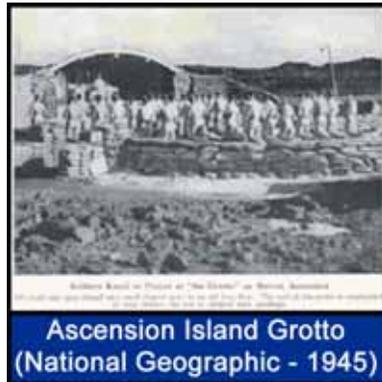
British Colonial Era Armory  
at Antigua Air Station

seaside lands of the USAF base were the site of early Amerindian as well as later British Colonial era settlements.

**Historic Buildings and Structures**

**Catholic Grotto at Ascension AAF**

Dedicated to preserving the history of World War II, cultural resource personnel initiated an undertaking to preserve a Roman Catholic Grotto at Ascension Auxiliary Airfield.



Located in a natural amphitheater in a historic “tent city” area, the Grotto was originally constructed of loose volcanic rock and gravel that was soon replaced with a manmade structure of lava rock and roofed with expanded metal track. The roof was later replaced with Quonset hut material and the supporting stones joined with mortar.

A 1945 issue of *National Geographic* shows the addition of a low wall extending from either side of the altar shelter. Later additions, constructed during the early days of the man-in-space effort, included a roofed area for the congregation, a concrete block perimeter wall, electric power, water and most recently, prefabricated living quarters for visiting Catholic clergy. The Grotto is still used today by the entire island population.

The 45SW initiated a \$20K design effort that included lead-based paint and asbestos surveys and replacement of the electrical system, lights and roof. When a world-wide search through the Defense Reutilization and Marketing Office



did not produce any Quonset hut material for the original roof, wing personnel resourcefully identified material from one of the modified Quonset huts slated for replacement on the base. The replacement roof over the congregation area will be a modern, low maintenance, metal roof matching the existing 1970s era roof.

Conservation personnel orchestrated the \$58K refurbishment construction project using the existing base operations and maintenance contractors.

**CCAFS Space Launch Complexes**

Conservation personnel spearheaded the massive refurbishment of the most significant facilities in the history of the U.S. space programs -- the first “blockhouses.” The blockhouse at LC-3/4 was constructed in 1950 to protect ground controllers from the potential dangers involved in launching rockets into space.

The building, constructed of rebar reinforced concrete approximately four feet thick, had large mirrors configured like a periscope inside a protective blast wall. The mirrors provided a view of the vehicle and launch process while protecting workers.

During the 50-year anniversary of the first launch from CCAFS, environmental personnel designed and oversaw asbestos removal, the replacement of the ready room and the restoration of the mirrors. The project also included the removal and restoration of the blast door, reapplication of exterior coatings and overall cleaning and painting.

At LC-1/2, all non-original roofing material was removed, mirrors and their enclosures were refurbished or replaced and painting completed. In addition, all unsafe components such as roof degradation, groundwater intrusion, deteriorated electrical components and broken windows were addressed, allowing visitors to enjoy the incredible history encapsulated at the facility.

### Archeological Resources

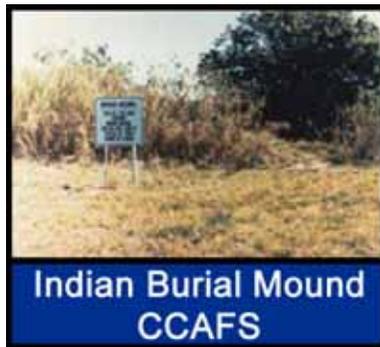
Archeological resources at 45SW facilities range from Native American artifacts and burial mounds to priceless relics from man's race to the moon.

A massive, multi-tiered project to survey and delineate archaeological sites at CCAFS enabled concentrated preservation efforts on historical artifacts. A follow-on 1993 archaeological survey revealed 51 Native American sites on CCAFS and the wing coordinated an archeological survey through the Army Corps of Engineers to evaluate their significance. The survey determined 16 sites were potentially eligible for listing on the NRHP. An extensive Phase II survey of all 16 sites, including four Ais Indian tribe burial mounds was conducted.

Shovel test pits confirmed the presence or absence of significant artifacts essential to the interpretation of a site and determination of its eligibility for NRHP listing. These tests also delineated the boundaries of the significant component of each eligible site. This survey determined that 11 of the 16 sites were eligible for NRHP listing.

The entire effort was coordinated with the SHPO in accordance with Section 106 of the NHPA, the Archaeological Resources Preservation Act and the Native American Graves Protection and Repatriation Act (NAGPRA).

Global Positioning System satellites launched from CCAFS were used to record the exact locations of the sites studied. This information was downloaded to the new AF-wide GIS and is now an element of the Base Comprehensive Plan, Spaceport Master Plan and Integrated Cultural Resource Management Plan. These integrated plans provide a valuable tool for wing leadership and planners.



This information was instrumental in protection of a Native American Indian burial mound during relocation of underground electrical lines at CCAFS. Realizing the vital necessity of security since the September 11, 2001 terrorist attacks, the wing initiated a project to bury all aboveground electrical lines to limit potential targets.

A line that services a substation crucial to the Boeing Evolved Expendable Launch Vehicle (EELV) program traverses an extremely sensitive archeological site that contains an Indian burial mound. An outstanding consultation package including a new design incorporating recommendations and precautions for protection of the mound was initiated and approved with the Florida SHPO.

### Native American Program

Sensitivity and diligence are second nature to 45SW personnel. After receiving a copy of the Phase II Archeological Investigation of 16 sites outlining burial mounds at Cape Canaveral AFS, the Miccosukee Tribe of Florida commended the wing for its dedication to preserving archeological artifacts and sites.

This proactive effort resulted in mutual respect and established a solid working relationship with the tribe. Recognizing the security of burial mounds located on the Cape, Miccosukee Indians partnered with the wing for the repatriation of human remains on three separate occasions under NAGPRA.

Personnel actively promote education and awareness of the Ais Indian's role in shaping the history of CCAFS through open-house events held at the Cape Lighthouse. These informative sessions provide guided tours and a verbal history of the Ais Indians role in the Cape's current name. The oldest surviving Spanish maps refer to the area as the

“Cape of Currents” ultimately abandoned in favor of “Cape Canaveral” or “Cape Canebrake.” Another translation is “Place of the Cane Bearers”, attributed to Spanish explorer Francisco Gordillo’s after he was shot by an Ais Indian arrow made of cane.

**Curation**

The Environmental Flight orchestrated a massive program to meticulously restore one-of-a-kind missiles at the AF Space Museum at CCAFS. Some of these missiles are original models intended for flight-testing but were never launched. In 1984, the National Park Service designated several launch complexes as National Historic Landmarks (NHL). This included Space Launch Complex 26 at the museum. These irreplaceable artifacts represent the step-by-step process that America pioneered to break the bounds of earth and venture into space. The museum plays a vital role in educating thousands of visitors to the site each year.

While the 1950-era missiles are comprised of materials that could withstand the rigors of space launch, they are not capable of withstanding the onslaughts of the very aggressive salt air of the Atlantic Ocean. The environmental flight, along with the museum curator, defined the scope of the restoration project, obtained funding and initiated restoration.

The U.S. Army Corps of Engineers, Construction Engineering Research



Laboratory was contracted to perform a condition assessment of the vehicles. A concurrent study was conducted to determine the significance of each artifact. These studies contributed to a prioritized list of all items in the “rocket garden” for restoration based on significance and

condition. Three rockets received immediate restorative attention: the Bullgoose, Rascal and Firebee. Currently, the Blue Scout rocket is being restored with every effort being made to preserve the original construction.

**Cultural Resources Awareness and Education**

Mentoring and community awareness are integral aspects of the 45SW cultural resources program.

The environmental flight, recognizing that education is key to protecting and promoting cultural resources, seized several opportunities to reach out to the base and general public. Overviews of culturally and ecologically sensitive areas are included in the monthly newcomers briefing. These info-fairs immediately raise environmental awareness of new employees and provide insight into the diverse environment of the 45SW.

Public awareness is enhanced through a comprehensive conservation web page that offers in-depth information about the history of Patrick AFB and Cape Canaveral AFS and its cultural resources. The site provides an overview of native Ais Indian occupancy and a history of Department of Defense development of the area during World War II, the Cold War and the Man-In-Space eras.

Eagerly looking for opportunities to augment education and awareness while contributing to the local community, the Environmental Flight employed a Summer Intern Florida Teacher to develop computer designed tri-fold brochures outlining the 45SW natural and cultural resources program. Commanders use them to promote and explain the broad variety of conservation efforts and accomplishments.

The 45SW in a collaborative, visionary effort developed and entered an agreement with the Cape Canaveral Lighthouse Foundation. This agreement enables the collection of funds to restore and maintain the facility and provide public access. This unique partnership resulted in tours of the

lower floors of the lighthouse and establishment of a gift shop.

Fundraisers are held on the lighthouse grounds to speed restoration of the facility. Semiannual cookouts include a gathering of former Cape Canaveral residents and their dependants who recant their experiences on the Cape before AF acquisition of the land. Highlights of the activities are guided tours to historic homesteads and family burial plots.

Committed to sharing history with the community youth, the team sponsored three Boy Scouts striving to earn their Eagle Scout rank. Environmental personnel enthusiastically worked with the scoutmaster and scouts to guide construction of three separate interpretive displays for the lighthouse at the original site, the present location and the AF Space Museum. Conscientiously preserving history, the displays were built from shards of brick scattered around the original foundation site. This initiative was lauded by the Florida SHPO as an innovative effort in recycling original pieces thereby creating a link to the lighthouse and its history. This project stands as a monument to the history of CCAFS and the beacons that steered ships to safe passage.

### ***Community Relations***

45SW cultural resource personnel go the extra mile to help ensure the right things are done at the right time.

In 1984, the National Park Service (NPS) designated several areas of CCAFS as National Historic Landmarks; however, incorrectly listed the AF as the owner of the original NASA Gemini and Mercury Mission Control Center consoles. NASA wanted to relocate the consoles to the Kennedy Space Center (KSC) visitor's center to provide better public access to manned space flight history.

45SW cultural resources personnel partnered with NASA and the NPS to



correctly list NASA as the owner. When NASA encountered difficulty with the Florida SHPO regarding moving the landmark, 45SW conservationists helped resolve the issues. Due to a previously established, outstanding relationship with the SHPO, 45SW personnel

negotiated a plan where NASA will create an exact replica in its place. Also, NASA will return the equipment to the original CCAFS site if the display is ever discontinued at KSC.

Reaching out to the community in every way, conservation personnel provided the 45SW Restoration Advisory Board (RAB) a presentation on the wing's cultural resources program. Twenty community volunteers were briefed on the vast array of cultural resources, their impact on environmental restoration activities and the history protected and preserved by wing personnel.

Reaching out worldwide, 45SW conservation personnel partnered with NASA to initiate a daily bus tour of the Cape. Since CCAFS is a restricted area, this was the optimal avenue to share America's space history with the ever-growing number of visitors. The tour consists of operational and historic launch facilities, the AF Space and Missile Museum, the LC-26 blockhouse and exhibit hall and numerous outdoor exhibits in the famed "rocket garden."

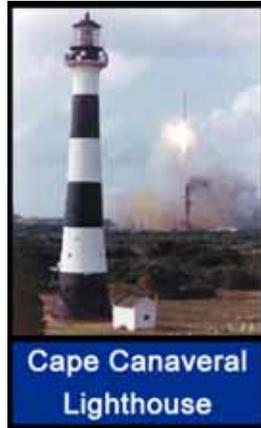
### ***Environmental Enhancement***

Ingenuity and determination were key factors in the acquisition and restoration of a priceless artifact on CCAFS.

The 45SW, through lengthy and delicate discussions, obtained ownership and subsequent preservation responsibility of the Cape Canaveral Lighthouse and adjacent oil house located in the heart of CCAFS. Due to the emergence of Global Positioning System technology, the US Coast Guard (USCG) no longer needed the lighthouse.

Property record research discovered

that the lighthouse complex encompassed approximately 640 acres and included almost the entire tip of CCAFS and several launch complexes. This unexpected and unique situation resulted in the wing facilitating negotiations for the transfer of the property, lighthouse and oil house from the US Coast Guard, through the Bureau of Land Management, to the USAF.



The original, historic lighthouse was built in 1843, replaced in 1868, and subsequently moved 1.5 miles inland in 1894. The oil house, used to store whale oil burned in the light, was missing its roof and the badly deteriorated door had been removed for safekeeping.

During the design phase of the restoration project, personnel conducted a lengthy search for drawings of the facilities or other lighthouses constructed during that period. Coming up empty-handed, personnel resourcefully visited the lighthouse at Tybee Island that is of the same construction. The Tybee Island museum had drawings and photographs of their lighthouse and oil house. Ironically, the facilities are so similar that pictures on the walls were discovered to actually be from a wedding at the Cape Canaveral Lighthouse. This resourcefulness led to restoration of the facilities as close to original specifications as possible.

Cultural resource protection also plays an integral role in the wing's restoration program. Historical and archaeological resources are considered before and during every remedial activity under the Installation Restoration Program.

A massive amount of soil contaminated with hazardous chemicals was removed from several historic, inactive launch

complexes and the Trident Wharf area, a test center for torpedoes and submarine-launched rockets. These actions resulted in unrestricted land use at the historically significant sites. In addition, these cleanups directly benefit threatened and endangered species residing in these areas such as gopher tortoises.

### *Mission Enhancement*

The environmental flight was critical in clearing the way for reuse of deactivated launch sites for potential new programs. Conservation personnel consulted with the Florida SHPO to accomplish Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER) documentation on launch facilities. Completion of the documentation preserves these areas in perpetuity and provides a basis for reactivation.

A diverse history is forever preserved due to this effort. Launch complexes 1/2 supported the Snark missile program--the first and only long-range intercontinental winged missile. Bumper, the first US space launch in 1950 and the Matador, the first AF missile program to become operational, originated from LC-3. LC-4 was built to launch Bomarc, the first defensive missile weapon system while complexes 9 and 10 supported Navaho launches. LC-14 was used for Atlas research and development; was the site of NASA's 1959 Pioneer lunar attempt and the launch site for all Mercury missions. Complex 34, built for the Saturn/Apollo missions, was the site of the tragic fire in 1967 that took the lives of astronauts Gus Grissom, Edward White and Roger Chaffee.

Conservation personnel developed yet another tool to enable planners and environmental personnel to rapidly identify and evaluate impacts of proposed actions at any launch complex on CCAFS. A compact, comprehensive, one-of-a-kind matrix was developed combining the Geographic Information System with textual descriptions

that readily identifies cultural resources with a numerical score. Historical and archeological sites are included as well as locations of threatened and endangered species, wetlands, contamination, relevant permits and other critical environmental aspects. This matrix enables conservation personnel to readily support the 45SW's primary mission of assured access to space by quickly identifying a cultural resource for possible reuse.

A vital Aerospace Ground Equipment storage facility was needed for the Delta IV, the nation's new generation of Evolved Expendable Launch Vehicles. Boeing sought to modify and reuse a gaseous tanker parking facility located on the adjacent, Man-In-Space, National Historic Landmark, LC-34 site. In accordance with Section 110 of the National Historic Preservation Act, cultural resource personnel prepared a Section 106 Consultation with the Florida SHPO to facilitate this effort that also included a real property transfer and preservation responsibility to Boeing.

Again supporting facility reutilization, the environmental flight innovatively defined the scope and solutions to two civil engineering problems allowing modification and reuse of the historic LC-14 blockhouse. A vacant space previously used as a furnace room was creatively converted allowing handicap access to a new restroom in compliance with the Americans with Disabilities Act. The useable facility has no visible change from its original appearance.

### ***Cultural Resources Compliance***

Environmental personnel facilitated the exceptionally challenging removal and transfer of a portion of a national historic landmark back to the AF Museum at Wright-Patterson AFB. A launch table at LC-26 that supported a historic Redstone rocket shrouded by a Mobile Service Tower (MST) was a contributing property to the site's NHL designation. This equipment, identical to tables used to launch German V-2 and some American rockets, was specifically requested

for incorporation into the Wright-Patterson AFB museum holdings.

Wing personnel expedited a Section 106 Consultation and received SHPO concurrence within 30 days. Seeing an opportunity to capitalize on an existing project, personnel integrated the removal into a project to refurbish the Redstone rocket and parts of the MST. This was a prudent decision as the Wright-Patterson museum does not receive its own funding to cover these actions.

Never missing an opportunity to preserve history, cultural resources personnel were instrumental in the successful refurbishment and relocation of a critical component of the Manned Space Program. When the LC-19 erector was scheduled for demolition, the conservation office took the lead in salvaging the white (clean) room and relocated it to the "rocket garden" at the museum. A special project and memorandum of agreement was developed to cut away this 5-story, 41-ton facility and move it five miles to a restoration area. This three-phase project also involved asbestos and lead-based paint abatement and the building and erecting of the restored facility. As a result of these efforts, museum visitors can now experience firsthand the last moments Gemini astronauts experienced before blasting off into space.

### **COMMITMENT**

The 45SW is committed to environmental excellence in cultural resource management. The team continues to seek new ways to protect, preserve and restore the environment. These exceptional stewardship programs continue to grow and expand ensuring cultural resources exist for generations to come.

The 45SW's commitment to supporting the AF space mission while protecting cultural resources can be summed up with one phrase:

*"Our mission is space..."*

*"Our responsibility is the earth."*