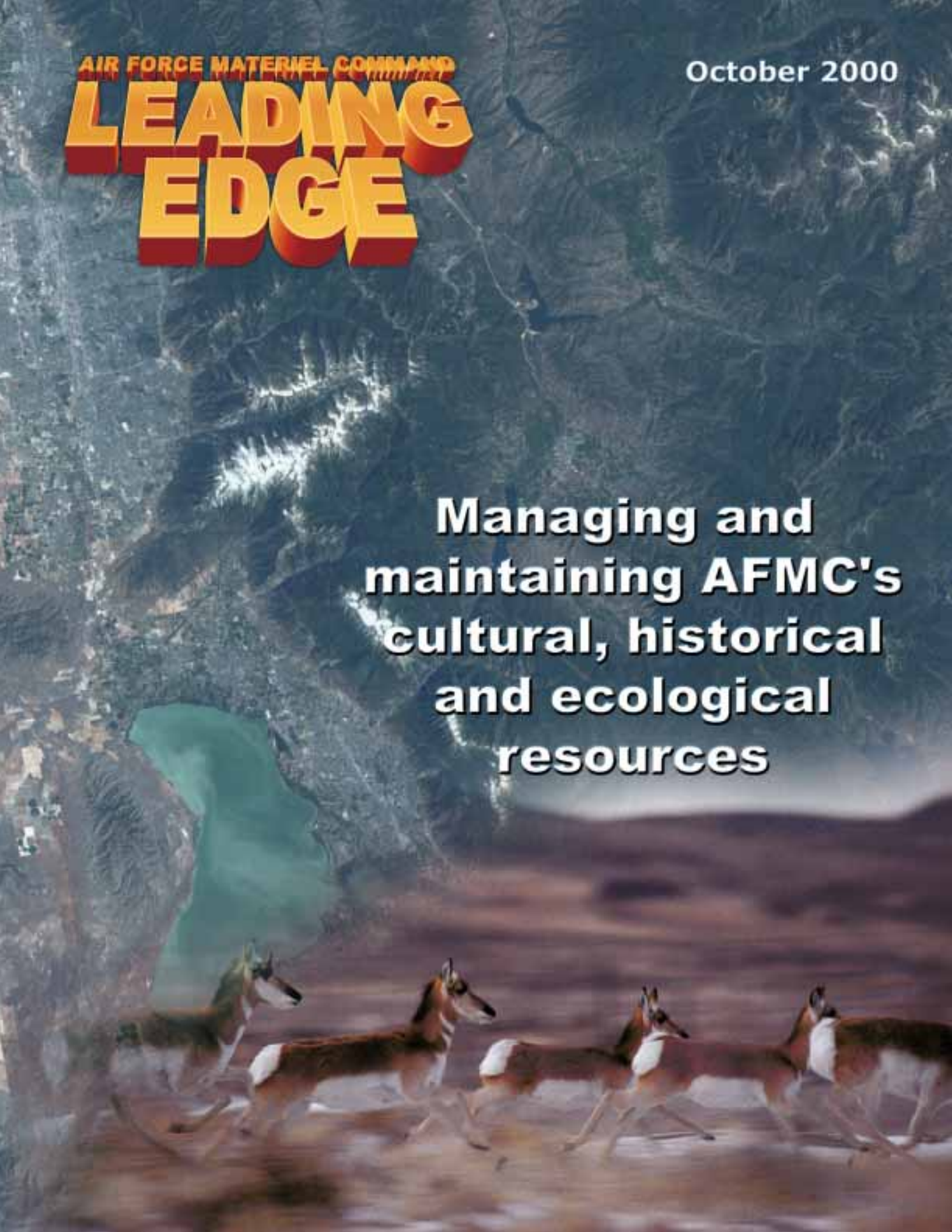
AIR FORCE MATERIEL COMMAND

LEADING EDGE

October 2000

Managing and maintaining AFMC's cultural, historical and ecological resources



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Cover Stories

Landsat image of the Great Salt Lake area courtesy of Mr. Stan Huffman, AFMC Intelligence office. Utah antelope photo courtesy of Master Sgt. Louis Aran-Barradas, Airman magazine. (cover by Capt. CK Keegan)

From safeguarding ancient American Indian artifacts, to preserving animal habitats by learning about the birds and the bees, AFMC installations are working to keep entire ecosystems environmentally compliance and preserved while meeting mission requirements. Turn the page and look at the many ways AFMC maintains its vast cultural, historical and ecological resources.

Mission Progress

Features

Departments

Back Cover

Landsat image of the Great Salt Lake area courtesy of Mr. Stan Huffman, AFMC Intelligence office.

Headquarters
Air Force Materiel Command
Wright-Patterson Air Force Base, Ohio

Commander and publisher
Gen. Lester Lyles

Director of Public Affairs
and editor-in-chief
Col. Donna Pastor

Chief, Internal Communications
Capt. Michael Kelly

Executive editor
Ms. Libby VanHook

Managing editor
Capt. CK Keegan

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elizabeth.vanhook@wpafb.af.mil

PRODUCT SUPPORT

Joint STARS delivery doubles fleet

HANSCOM AIR FORCE BASE, Mass. — Continuing a trend of early deliveries, the eighth E-8C Joint Surveillance Target Attack Radar System aircraft was turned over by the Electronic Systems Center to the 93rd Air Control Wing, Robins AFB, Ga., July 27, marking the fourth delivery this fiscal year.

Better known as Joint STARS, the plane's arrival doubled the size of the fleet.

The aircraft was delivered four and a half weeks early, aircraft five was delivered six weeks early, aircraft six was four weeks early and aircraft seven was three weeks early.

The delivery brings the wing's assets to more than 50 percent of the 15 scheduled to go to Robins.

Joint STARS is a powerful airborne surveillance and target acquisition system that provides real-time, accurate information for peacekeeping or decision-making on the battlefield.

— ESC Public Affairs report

F-117 fighters temporarily at Wright-Patterson

WRIGHT-PATTERSON AIR FORCE BASE, Ohio — Three F-117 stealth fighters from 49th Fighter Wing, Air Combat Command, Holloman AFB, N.M., were temporarily stationed here for two weeks beginning August 11.

The aircraft and support crews used Wright-Patterson facilities to meet their scheduled mid-west, east coast and Canadian air show obligations and conduct routine flight training.

Aeronautical Systems Center helped develop the F-117 fighter. Scientists and engineers from Air Force Research Laboratory (formerly Wright and Armstrong laboratories) developed F-117 technologies, including stealth and reduced radar techniques, forward-looking infrared electronics, a fly-by-wire flight control system, advanced materials and engine advancements.

Two F-117 stealth fighters, also from the 49th Fighter Wing, were previously stationed here during the summer of 1996.

— ASC Public Affairs report

TEST AND EVALUATION

Wind tunnel testing examines new weapon

ARNOLD AIR FORCE BASE, Tenn. — A series of wind tunnel tests conducted at Arnold Engineering Development Center examined new weapon options for the B-1B Lancer.

"The primary objective for this test was to assess the separation characteristics of the Joint Air-to-Surface Standoff Missile, or JASSM, from the B-1 aircraft," said Mr. Ricky Arterbury, store separation engineer for the Air Force Seek Eagle Office.

"A secondary objective was to do a similar test with the Joint Standoff Weapon, or JSOW," he said. "By doing the wind tunnel tests, we reduce the number of flight test missions from 15 or 20 down to seven or eight."

Arnold test crews performed the tests in the center's 16-foot transonic wind tunnel using 10-percent scale B-1B aircraft. The aircraft models were mounted upside down in the tunnel on a support system called a strut. The strut is attached to the floor of the wind tunnel's test section.

The models were mounted on a special moveable support system called a sting attached within the test section, and positioned very close to the aircraft as it would be in flight.

After the desired simulated flight conditions were reached in the wind tunnel, the munition model was launched from the B-1B model by activating computer-controlled movement of the sting.

The JASSM is an Air Force precision cruise missile designed by Lockheed-Martin for launch outside area defenses. Containing a global positioning system and inertial navigation system, JASSM is capable of aimpoint detection, tracking and striking.

Under development by the Raytheon Company for the Air Force and Navy, JSOW is a launch and leave, 1,000-pound class, low-cost, glide weapon with standoff capability intended to be highly lethal.

It will be used against a variety of land and sea targets and operates a global positioning system and inertial navigation system to allow day and night and adverse weather operations, allowing JSOW to operate from ranges outside enemy point defenses.

— AEDC Public Affairs report

TEST AND EVALUATION

Raptor passes another test

EDWARDS AIR FORCE BASE, Calif. — The F-22 Raptor's internal-mounted M61A2 six-barreled 20mm lightweight Gatling gun's (upper right wing) hydraulic door was tested during a recent flight test of Raptor 4002 above the Mojave Desert. The successful test was designed to see how the door would react when opened at high speeds.

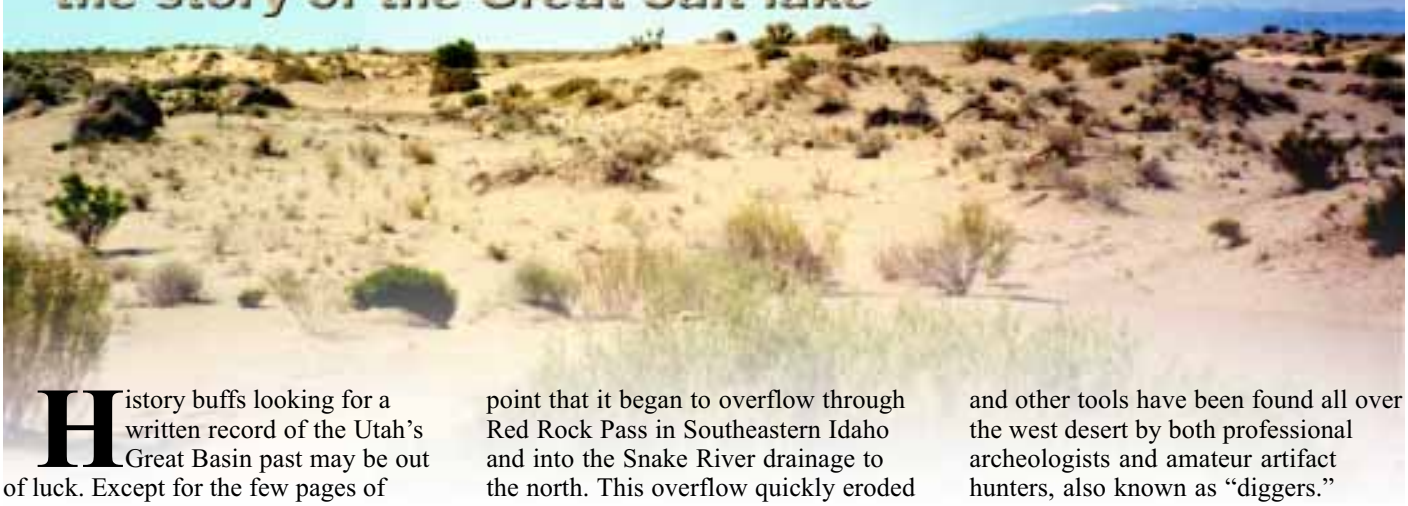
Built by General Dynamics in Burlington, Vt., the gun can fire 6,000 rounds per minute, although the Raptor usually carries only 480 rounds.

Almost all current U.S. military fighters and attack jets have been equipped with the M61 or its follow-on models since the 1950s.

— Reported by Mr. Ray Johnson, AFFTC Public Affairs (Photo by Mr. Judson Brohmer)

History is not just words on a page

Etched in mountains, deposited in valleys and tucked away - unwritten history tells the story of the Great Salt lake



History buffs looking for a written record of the Utah's Great Basin past may be out of luck. Except for the few pages of observations made by early explorers of the western frontier, Mormon pioneers who settled the Salt Lake Valley in 1847 made the first known written history of this area.

But history is not always comprised of words arranged on a page. In the case of the Great Salt Lake Desert, history is etched on the mountainsides, deposited on the valley floor, tucked away in caves or told in the stories and traditions of the American Indian people.

Thanks to the cooperative effort of the Air Force, archeologists and the local Indian tribes, this unwritten history of this area is gradually being uncovered, due in large part to discoveries made on the Utah Test and Training Range, located in Utah's west desert.

Long ago

The Great Basin was not always as it appears today. Thousands of years ago, the valleys of Western Utah were filled with an inland sea called Lake Bonneville, a relic of the Ice Age that covered 20,000 square miles.

At its height during the Pleistocene era about 18,000 years ago, plant and animal life thrived around its shores. The climate was wetter and cooler than today, supporting a large variety of now extinct species, including woolly mammoths, prehistoric bison and giant beavers.

Eventually the lake level rose to the point that it began to overflow through Red Rock Pass in Southeastern Idaho and into the Snake River drainage to the north. This overflow quickly eroded the canyon walls, causing a catastrophic flood, which lowered the lake level by about 350 feet. As the climate became warmer and dryer, the lake level gradually receded.

About 10,000 years ago another climate change stabilized the lake level at an elevation of about 4,250 feet. Called the Gilbert Level, the lake covered 6,600 square miles, or roughly four times its current size.

While saltier than most freshwater lakes, the Great Salt Lake was still able to support a wide variety of animal and plant life in and around the water. It was this abundance that attracted humans to the area.

Eventually, the climate turned warmer and drier, gradually shrinking the lake to its present size. Today, sand dunes and desert grasses have replaced the lush wetlands that once covered portions of western Utah.

A wealth of artifacts

The changing climate and receding lake levels forced the nomadic tribes that once inhabited the area to retreat to more hospitable environments. What they left behind was a plethora of artifacts that are speaking to archeologists thousands of years after they were last used.

Throughout the deserts of Western Utah, archeologists have discovered many evidences of these indigenous peoples, particularly along the ancient shorelines. Arrowheads, spear points and other tools have been found all over the west desert by both professional archeologists and amateur artifact hunters, also known as "diggers."

These public lands have long been a favorite spot of diggers who scour the desert in search of artifacts. Easy access and finds have resulted in many sites having their cultural and historical value destroyed. Worse still is the devastation to the spiritual value of the sites, many of which are considered sacred by the descendants of those who once roamed this area.

Protecting and preserving artifacts

Not all of the land in western Utah is open to the public. Decades ago, the military established bombing and gunnery ranges to train crews for combat in the defense of our country.

Covering more than 1 million acres in the vast Great Salt Lake Desert, the Utah Test and Training Range serves as a practice field for some of the world's most sophisticated weapon systems. Pilots come here year after year to hone their combat skills, dropping live and dummy bombs on targets placed throughout the diverse landscape.

Setting aside 1 million acres of desert for military use has also had another important benefit — people are kept out of the area.

Even with regular target cleanups, military ranges can be hazardous environments. On the ground, unexploded bombs and bullets pose a serious threat of explosion if disturbed. Above, aircraft streak through the skies, dropping bombs and shooting guns at

ground-based targets.

To maintain proper security and protect people from being injured, the Air Force makes a concerted effort to keep people off the range, including regular patrols, fences, warning signs and electronic sensors. In addition, those caught trespassing face fines and jail time.

While public safety is the primary motivation for the Air Force's concern, the security measures have had the added benefit of protecting archeological sites, the contents of which are just now beginning to be discovered.

Significant finds

In the past 10 years, several significant archeological discoveries have been made on the range. "We have found approximately 300 sites," said Ms. Debbie Hall, cultural resources preservation officer for Hill Air Force Base, Utah, "all of which require protection and preservation."

The latest discovery is one of the largest deposits of stone weapons and tools ever found in the Eastern Great Basin. Dubbed "Wild Isle" by those working on the project, this site shows no signs of human interference, meaning that the artifacts may not have been seen by human eyes for thousands of years.

"As we were surveying the area for a new road, we began to find a number of what we call Western Stemmed points," Ms. Hall said. "The more we looked, the more we found.

"We knew we had sites in the upland areas, but we were pleasantly surprised by the sheer number of points at this site," she said. "It was all very exciting."

The points found at Wild Isle are mostly made of basalt, which does not occur naturally in the area. Because of this, archeologists are confident the points and tools were purposely carried to the Wild Isle area from another location. The types of weapons and tools found seem to indicate they were made about 10,000 years ago.

The question of why the tools and weapons were brought to Wild Isle may not be answered for many years. Maybe it was a settlement along the lakeshore. Perhaps it was a cultural or religious center. Only more research can begin to unravel the mystery of the people who fabricated these tools.

The findings here are no surprise to American Indian people in the area, many of whom are descended from these ancient settlers. For them, these discoveries prove something they have known all along.

"For years our people were told that there were no Indians that lived here anciently," said Ms. Patty Timbimboo-Madsen, tribe member of the Northwestern Band of the Shoshone. "But our people have always known our ancestors lived in this area. After many years of neglect by history books, there's satisfaction in knowing my people's traditions proved more accurate than the accounts of historians."

The sand dunes on Wild Isle move back and forth across the desert floor. Indian spear points, arrowheads and newer weapons are found there.

These oral histories have been passed along for hundreds of generations and preserved a rich cultural heritage shared by all Indian tribes in the area. But as more artifacts are uncovered, scientists and historians are discovering that these stories and legends could help them put together some of the missing pieces in the archeological record.

Mending bridges

Many years of distrust between the federal government and the tribes have made the Indian people wary of the Air Force's intentions. "Our past dealings with the white man have produced a lot of hurt feelings," Ms. Timbimboo-Madsen said. "But we see things changing."

She said the efforts of people like Ms. Hall have gone a long way to mend the bridges of distrust that have separated the cultures for generations.

However, despite the improving relations, fundamental differences in opinion over how to treat the sites still exist. "We wish the archologists would just leave these sites alone," she said. "Why do you want to know about these people? How would you feel if someone wanted to dig up the graves of your ancestors? We just have a hard time understanding why any of this makes any difference now."

"This is a very emotional issue for the Indian people," Ms. Hall said. "We have to be sensitive to their feelings, because to them, these sites represent a sacred part of their culture and heritage."

The Air Force's mission now recognizes the need for the identification and preservation of archeological sites. This is being done in close consultation with the affected tribes, an effort that is much appreciated by Ms. Timbimboo-Madsen and other tribal leaders.

For Ms. Hall, this has meant constant contact and an open line of communication. "When we find something, we immediately contact the tribal representatives and let them know what we've found. We then consult with them as we decide what to do with the site."

Ms. Timbimboo-Madsen says she understands the need to have a strong national defense. Her hope is that a middle ground can be found: one that fulfills the training needs of the Air Force, yet respects and preserves the spiritual and cultural relics of the Indian people, whose ancestors once roamed these deserts.

Undoubtedly, the range holds many more archeological secrets that have even been lost to the oral histories, and more of these sites will be discovered in the future. But because of the Air Force's commitment to preserving these sites, both the written and oral histories of the people who once roamed the Great Basin will be enhanced and preserved for generations to come.

— Mr. David Harris, OO-ALC Environmental Division

Protecting the past

Looters threaten archeological treasures

The past belongs to the future, but only the present can preserve it. Protecting national treasures has become a challenge for many cultural resource managers at archeological sites located on military installations around the country.

Archeological sites represent who we are, and where we have been. These sites can include sacred burial grounds, villages, turpentine and whiskey stills, ghost towns, prehistoric trash sites and historic battle sites.

The study of prehistory and history of people is often done by archeologists, anthropologists, historians and some American Indians — compiling data, information and evidence as they work.

In order to do this correctly, the sites must be undisturbed. Once these sites have been disturbed, they cannot be reconstructed and the past is lost forever.

Protected by law

Archeological sites on federal property are required to be preserved by laws dating back to the Antiquities Act of 1906. More recently enacted is the Archeological Resource Protection Act, or ARPA and the Archeological and Historic Preservation Act.

A military installation would seem an ideal location to safeguard these sites, but unfortunately that is not always the case. Looters and casual collectors alike are gaining access in many creative ways.

The government is taking precautions to prevent this from happening.

Under ARPA, which covers sites more than 100 years old, violators can be imprisoned, fined as much as $250,000 and their vehicles and equipment confiscated. The law also has provisions for imposition of civil penalties. Still, many people have made a career of stealing national treasures for their own personal profit.

For sites less than 100 years old, looters can be charged with theft or destruction of government property.

At Edwards Air Force Base, Calif., there are homestead sites where looters and artifact hunters search for glass bottles and antiques. Relying on technology to plunder the landscape, the metal detector-equipped enthusiasts search for buckles, coins, buttons, metal toys, kitchenware and money.

At Robins AFB, Ga., site excavations have uncovered thousands of ancient stone relics, ranging from spear points and tools to pottery shards. One archaeological site shows evidence of occupation as early as 4,000 B.C.

Robins has had problems with pot hunting. A large village site had been heavily damaged by looters before protective measures were taken.

Harsh sentence imposed

One man, a self-admitted third-generation pothunter, was convicted and sentenced to more than six years in prison. The man believed he had a special right to destroy, loot and plunder and he made a way of life selling pottery, baskets and other artifacts he stole from federal lands in southeastern Utah.

He claims he looted his first grave when he was 3 years old. He granted an interview to a national publication that included a photograph of him leaning on a shovel and wearing a hard hat. He bragged about making up to $5,000 a day digging up ancient graves. In a television interview in 1988, he bragged his chances of being caught were "about one in a million."

Taking a toll

Looting is not the only problem. Vandalism also takes a toll on our cultural resources. Typical activities include shooting at homestead sites, graffiti and dumping of trash.

Campers and hikers pose another danger. They may unknowingly disturb or destroy a site in an area yet to be surveyed. An additional problem is that recreational vehicles and motorcycles often leave approved trails and damage sites.

Steps are being taken to protect sites at AFMC installations. These include public education through traveling exhibits, videotapes and presentations to local collectors to educate the public about the need to protect these valuable resources. Sites are being fenced and signs have been posted indicating that both criminal and civil penalties can be imposed on trespassers.

Creating a framework

Archeological sites create a framework for thinking about the past. The past belongs to all of us, and learning about our ancestors makes us whole.

There are ways everyone can help prevent this selfish minority from stealing national treasures.

Become educated about preserving traces of the past. Safeguard one of America's greatest treasures — it's our heritage. Report vandalism, looting, defacement or excavations of prehistoric and historic sites to the cultural resource management office of the federal property in question.

The national cultural resources located on the public domain are your history — your past.

— Ms. Libby VanHook, Executive Editor

Flooded lakebeds teem with life

As surely as the swallows return to San Juan Capistrano Mission each year, tiny shrimp eggs spring to life by the millions when rains fill Rogers and Rosamond Dry dry lakebeds and clay pans at Edwards Air Force Base, Calif., in the Mojave Desert.

The dry lakebeds, geologically known as "playas," are the breeding grounds for shrimp eggs that hatch shortly after getting wet with the rain that usually floods the lakebed surface during winter storms.

According to Mr. Mark Hagan, base natural resource manager for the Air Force Flight Test Center, the shrimps' lifespan depends on the life span of the particular pool. As the water disappears, so do the shrimp.

The shrimp, which can hatch as soon as 24 hours after immersion, may become visible in as little as five days. They can remain until the water is almost gone, which can be as long as seven months in years with a lot of rain.

The largest shrimp found at the end of the season could actually be those that have survived the longest, perhaps since the first hatching. Shrimp are continuously reproducing as long as there is enough water present. You can find several generations in one pan if you look closely.

"Once hatched, the small shrimp feed on organic nutrients, algae, water insects and each other in the shallow water," Mr. Hagan said.

Life cycle

"As the lakebed surface dries, the remaining shrimp die as they become stranded on dry land," he said. "The eggs not yet hatched settle down into the clay mud and wait for the next rainfall. Then the cycle starts over again."

It's not known how long the eggs may lay dormant in the dried playa surface, but some have been hatched in the laboratory after 25 years of storage, Mr. Hagan said. The eggs are actually very fragile when dry but are well protected when encased with the hard clay covering of the playa surfaces.

These desert shrimp are not the same as the shrimp found in supermarkets or restaurants. They are not brine shrimp, or the sea monkeys sold to children. They range in size from a small finger nail (1/4 inch) to four inches in length (the length of the palm of your hand) depending on the species.

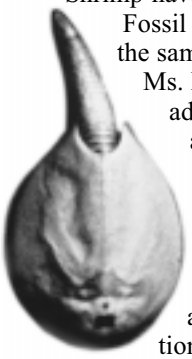
Shrimp are believed to be a main source of protein for the many birds — shorebirds, ducks, seagulls, even ravens — that either live here year-round or migrate through the area during spring.

People typically do not eat these kinds of shrimp. However, it's possible that Indians inhabiting the Mojave Desert many years ago collected the shrimp for food, said Mr. Rick Norwood, base archeologist and cultural resource manager.

Ms. Wanda Deal, assistant base natural resource manager, said that at least five different species of shrimp have been documented at approximately 37 locations on base. Other species, more difficult to find, may yet be discovered among the thousands of clay pans between Rosamond and Rogers Dry Lakes.

"Unlike most sensitive species, it's not the individual shrimp you have to be concerned with," said Ms. Deal. "In this case it's the habitat. As long as the habitat is viable, the shrimp should be there."

Surviving through the centuries



Shrimp have survived throughout the centuries here. Fossil records show that these shrimp look much the same today as they did millions of years ago, Ms. Deal said. "They have evolved with unique adaptations allowing them to survive in harsh arid environments. Most important is the ability to stay dormant throughout the dry years without suffering desiccation."

An occasional summer thunderstorm will deposit enough water on a lakebed to cause the shrimp eggs to hatch and complete another cycle or two before the final generation of eggs goes dormant, Mr. Hagan said. In fact, some freshwater shrimp only hatch out after summer rains, which can make them difficult to find here because summer rains are scarce.

The five known species here include three different types of fairy shrimp, which look similar to the shrimp you buy in the store; tadpole shrimp, which look like small horseshoe crabs; and a clam shrimp, which looks like a tiny clam. The largest fairy shrimp can attain a length of four inches and feeds on the smaller two fairy shrimp. The smaller fairy shrimp graze on algae and bacteria. The tadpole shrimp is an omnivore, feeding on both plants and animals.

Both the fairy and tadpole shrimp are found in fresh water ponds and lakes throughout the southwest deserts. Similar species have been found in North America in ponds and lakes at altitudes of more than 10,000 feet.

— Mr. Gary Hatch, AFFTC Environmental Public Affairs

Learning about the birds and the bees

The landscape on the military operations area in and around Hill Air Force Base, Utah, ranges from mud flats and "beach-front" property along the Great Salt Lake to majestic mountain ranges.

Six years ago, the conservation group from Hill Air Force Base, Utah, decided it was time to learn more about the birds and bees.

The group, from the environmental management directorate, joined forces with the federal Bureau of Land Management, Utah State University and the Utah Division of Wildlife Resources, to put together a five-year project to study which birds, bees, flowers, trees and jackrabbits reside on the 11.2 million acres in the west desert of Utah and a small part of adjacent Nevada under the military operations area.

Protecting natural resources

The Air Force needed to know exactly what was on the land because of federal and state laws protecting endangered, threatened and sensitive plants and animals.

"Endangered" plants and animals are those nearing extinction; those "threatened" could become endangered in the future if not cared for; and "sensitive" plants and animals are rare or vulnerable species that could become threatened or endangered if their numbers decline further.

The skies above this area belong to the military. The Department of Defense flies approximately 15,000-25,000 combat training flights each year in those skies, and the area is the largest special use airspace over land within the continental United States.

On the ground, though, a mere 16 percent of the land belongs to the military. The Bureau of Land Management owns approximately two-thirds and the rest is either privately owned or held by the state of Utah. Some of the area is classified as wilderness study area.

The 16 percent of military-owned land includes the Air Force's 2,490-square-mile Utah Test and Training Range where bombs and bullets from the 23,000 military training flights explode on the ground.

The range is approximately 50 miles west of Hill and has 16 target areas with more than 300 targets that are moved around for military pilots to practice their combat mission.

The rocket motors of the country's intercontinental ballistic missiles are also test fired or destroyed on another area of the range and other non-nuclear explosives are tested around the clock.

Mr. Marcus Blood, natural resources manager at Hill's Environmental Directorate and one of the members of the group that organized the five-year study, said the Air Force is the largest influence on the area because of it's activities within the military operations area.

"We want to be good stewards there," he said. "To do that, we needed to confirm exactly what threatened, endangered and sensitive species were out there and where."

The landscape under the military operations area ranges from mud flats and "beach-front" property along the Great Salt Lake to majestic mountain ranges.

A casual observer gazing through the windshield of a vehicle traveling across the area would see land that is mostly barren, with some sagebrush, salt desert scrub and grassland vegetation, a remote and mostly uninhabited area. But anyone who stops and gets out of their vehicle and travels off the beaten path will soon see that the area is teeming with life, said Mr. Blood.

"You just have no idea of all the things that are there," he said. "You see the big things — the eagles, antelope and rabbits. But there is so much more."

No small task

Learning exactly what lives on the millions of acres proved to be no small task. More than 40 scientists, technicians, managers and students participated in the study before it was completed.

The first year was spent in the library, reviewing literature published about the various plants and animals native to the area. More than 900 documents were reviewed.

Following the review, part of the study group used four species of threatened, endangered and sensitive plants within the military operations area to develop a statistical "predictive model."

This model was designed to help the biologists determine where protected plant species would be located at the range without doing an inch-by-inch physical search of the entire area. They studied satellite imagery and aerial photos, soils and vegetation maps and trekked miles to make spot checks to confirm their theory.

Studying entire ecosystems

The study group also decided they could not just concentrate on individual species of threatened, endangered and sensitive plants and animals. The decision was made to look at entire ecosystems, or communities of plants and animals

that rely on each other to survive. They broke the 11.2 million acres into 60 easier-to-manage ecosystems.

"Ecosystems have never been studied this completely before or down to this level," Mr. Blood said. "Our project was the first that I know of in the western United States to develop ecosystem models like we did."

Extra measures needed

Conducting the five-year study was not a 9-to-5 job. When Mr. Blood, fellow Air Force biologist Mr. Sanford Moss and Dr. Mike Wolfe of Utah State University set out to learn about the bats that inhabit the caves located within the area, they had to first get a wildlife permit from the State of Utah. Then they had to get a series of three rabies shots for their own protection to capture and handle the bats.

The best time to capture these bats was between 11 p.m. and 3 a.m. That meant they had to set up camp next to caves where they believed the bats lived.

They placed a net near the cave entrance to briefly capture the bats and identify them, and then waited with a sonogram and computer for the bats to show up.

When the five-year study ended, the Air Force and those involved had thousands of pages of data about the birds, bees, plants and animals within the military operations area that Mr. Blood estimates will take another 15 years to analyze in-depth.

For example, they found and studied 18 species of birds that are federally protected and 140 species of insects, including seven species of bees that had never been identified before.

Retrieval system

The end result is a unique retrieval system that allows biologists to learn with a click of a computer mouse what is in a particular area of the military operations area.

"I can click on an area of the map and find out who owns the property and what threatened, endangered or sensitive species use the area," Mr. Blood said. "I can also do a key word search to find information.

"Instead of trying to look for a needle in a haystack like we were doing, we now have a magnet that pulls the needle out."

The retrieval system has already proven its worth to the Air Force. When an F-16 Fighting Falcon crashed on Bureau of Land Management property, Mr. Blood was able to identify its coordinates and immediately knew if there were any federally protected plants or animals in the area.

Since there was a federally protected plant nearby, the crash recovery team convoy was notified and was able to go around the plant to avoid causing any harm to it.

Moving away from the past

It also proved helpful when the Air Force wanted to establish a new area on the Utah Test Training Range to handle rocket motor burns and detonations. The initial location chosen turned out to be within a half mile of a federally protected golden eagle nesting area.

"After an environmental assessment, the decision was made not to locate the area near the eagles' nests," Mr. Blood said.

Since the five-year study's completion, Mr. Blood has narrowed his focus to just the 960,000 acres the Air Force directly manages.

He is currently reworking Hill's integrated natural resources management plan to reflect concern for an entire ecosystem and get away from the single-species approach of the past.

"We know from our extensive survey of the military operations area that the golden eagle's biggest food source is jackrabbits," he said.

"In the single species approach, we would manage for the golden eagle but not the jackrabbit that is not federally protected. But if we were to destroy all habitat for jackrabbits and they go away, that affects the eagle even though we didn't directly hurt him.

"Now we're asking ourselves the questions about what the jackrabbit needs for food, shelter, water, reproduction and habitat."

Reaping the benefits

Mr. Blood said the information the Air Force has gathered during the study is proving invaluable. "This project was beneficial all around. Many people have already benefited from it and will continue to benefit in the future — not just the Air Force.

"We want to be as environmentally responsible as possible to meet our military requirements, and we are better able to do that now."

— Ms. Barbara Fisher, OC-ALC Environmental Management Directorate

Following the five-year study of the military operations area, the group found and studied 18 species of birds that are federally protected and 140 species of insects, including seven species of bees that have never been identified before on the 960,000 acres the Air Force directly manages.

They emerge from the clearing tired and sweating from the sweltering 110-degree heat index. Camouflage-painted faces shine against the hot Florida sun as they look up to see where their squad leader is leading them. Water-logged, mud-soaked combat boots leave deep footprints in the dirt as they bravely march toward the Zodiac boats to complete their next mission. They are the Army Rangers' wives.

Ninety-two women (Rangers' wives, their female friends and family members) participated in the Army 6th Ranger Training Battalion's annual Ranger Wives Swamp Walk at Camp James E. Rudder located on Eglin Air Force Base, Fla., June 15.

The all-day event was created to give the Rangers' wives and their friends an opportunity to get together, enjoy the experience of the Florida phase of Ranger school and build camaraderie and friendship, said Army Lt. Col. Mark A. Johnstone, 6th RTB commander.

During the Swamp Walk, participants attended a reptile education class. They saw and learned about snakes found in the southeastern United States. They also visited a pool located next to the reptile house where they learned about the three alligators that live there.

Afterward, the group divided into four squads and rotated through the weapons familiarization and rappelling classes. Army Command Sgt. Maj. Gail Ernst, 6th RTB Ranger instructor, said the rappelling class is one of the most popular events at the Swamp Walk.

"We get a lot of positive feedback from the wives," Sgt. Maj. Ernst said. "Some of the participants who rappelled said they didn't think they'd do anything like that. But they got the courage to do so and were very proud of it."

After lunch at the Gator Lounge, the squads departed by truck to Prisoners' Pond where, under the supervision of instructors, they conducted a one-rope stream crossing, hiked through the mud-bogged swamps and competed in a boat race. Husbands stood along the shore and cheered for their wives who paddled across the river and then back to shore.

Sgt. Maj. Ernst's wife Mrs. Joni Ernst was the leader of one of the squads. This was her first Swamp Walk. "After listening to the other wives talk about it, I thought, 'I want to be part of that,'" she said. "Now I can tell stories to other new wives."

She added that she may have experienced only a tiny part of Ranger training, but she has gained a greater understanding of her husband's job. "Now I understand why my husband is so tired when he comes home," she said.

Three-time Swamp Walk veteran Mrs. Diane Perkins, wife of Ranger instructor Army Sgt. 1st Class Cory Perkins, received the first ever Sgt. George's Singing Award for her outstanding job in calling cadence. She and the members of her squad had been planning for the event for weeks, donning water guns and T-shirts with the words "Perkins' Platoon" printed on them.

Mrs. Perkins said the best part of the Swamp Walk is the people she meets and the special bond among the wives. "You get to know other wives and the people your husband works with. Each time I go out there, I make new friends," Mrs. Perkins said. "And later, it's fun to laugh and joke with the other wives about falling in the mud and our other swamp adventures."

The Swamp Walk also gives the Rangers' wives a better idea of what it's like to be in their husband's boots, she explained. "Now they can understand why their bathtub constantly has a ring of swamp and camouflage in it," she laughed.

— 2nd Lt. Cris Gentile, AAC Public Affairs

Tree harvest pays for management program

Air Arnold Engineering Development Center, Arnold Force Base, Tenn., is committed to conserving the area's wildlife, natural and cultural resources. That's why properly managing the base's pine forest is essential.

Arnold has more than 5,900 acres of pine forest and 23,000 acres of hardwood forest, said Mr. Mark Moran, Arnold's Environmental Management Division natural resources manager.

The base boasts 4,300 acres of mixed pine — mainly loblolly, short leaf, Virginia and white pine — which were planted between 1950 and 1960 as part of the base's sound attenuation program.

"This provides somewhat of a buffer between Arnold and the surrounding communities," he said. An additional 1,400 acres were planted between 1960 and 1970. During this time center leaders initiated a pine-harvesting program. During the next 15 years, the harvesting program consisted of thinning the existing pine stands. Final harvests, or clear cutting the pine stands, started in 1982.

"A pine reforestation program started in 1983 replants pine where the final harvests were completed," said Mr. Moran. "We now plant loblolly pine exclusively for the reforestation program because it has proven to grow better and faster than other species over the full range of site classes."

The pine forest is an important economic part of the natural resources management program. The revenues generated by selling forest products are used to offset the costs of the overall AEDC forest management program.

"We harvest around 200 acres of pine each year," Mr. Moran said. "Our forest management budget is $285,000 per year and in 2000 alone we've collected $300,000 from the pine forest harvest." He estimated the harvest in 2000 could bring in close to $400,000. The average trees at first harvest are 40 years old and 18-24 inches in diameter, said Mr. Moran. After the harvest, the area is left for 12 to 18 months before site preparations and replanting take place.

The harvests are scattered over the entire acreage so a well-balanced distribution of age classes can be maintained. The average size of the pine stands is 11 acres with sizes ranging from two to 80 acres. Clear-cutting large acreages of multiple stands in single locations is avoided.

Mr. Moran said that along with the 5,900 acres of pine, Arnold also has 23,000 acres of mixed hardwood trees, mainly oak, hickory and some poplar and maple. The overall forest provides essential habitat for a diversity of species. "Of the thousands of species that call Arnold home, 72 are listed by the federal and state governments as endangered or in need of management," he said.

— Mr. Marty Martin, AEDC Public Affairs

Motors rocket through Utah

Many people think military training ranges are places where jets swoop down for strafing runs or to drop bombs.

Take the Utah Test and Training Range. It has a whopping 16,650 square miles of air space. So, yes, most days jets do zoom in to hone their lethal trade, tangle in dogfights, drop bombs or bust the sound barrier. But the range isn't just a great big bull's-eye. Much more goes on there.

Rocket motors are big business, too. The Air Force stores Minuteman and Peacekeeper motors at the Oasis compound. Some are operational and will go back into service. Others will see duty in space launch programs.

But many are Cold War relics, too old to use. So they wait in shelters — in a kind of rocket motor's death row — waiting to go out with a big bang.

Twenty-two airmen, missile maintenance and instrumentation troops do the "rocket-sitting." They're part of the depot maintenance crew. But they also do jobs other missile troops don't.

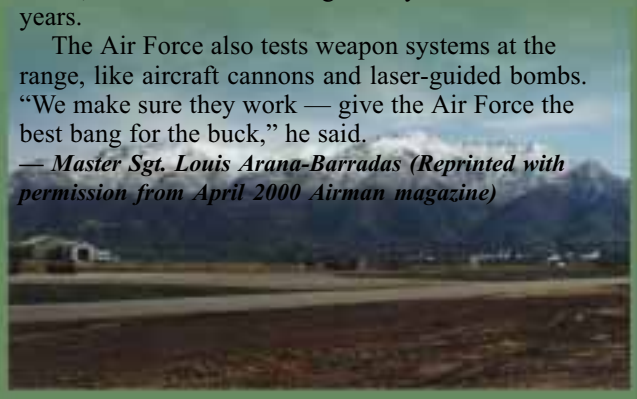
They do aging and surveillance tests on the rocket motor stages. And they help engineers find better ways to transport them to remote sites. Five times a year they static-fire one for testing. They also dissect them to test the propellant. And sometimes they'll wheel motors due for disposal to a spot on the range, called a thermal treatment unit, where explosive ordnance disposal teams blow them to bits.

Blowing up rocket motors helps pay the bills. For a cool $25 million, the Air Force blew up some 360 old Poseidon sea-launched ballistic missile rocket motors for the Navy. Now the Navy wants to get rid of some 800 old Trident I motors. That job will earn the range some $2 million a year until 2007. In contrast, the Navy would have had to cough up $300 million to build a place to dispose of them — and that technology doesn't exist yet.

The Air Force also does propagation tests at the range to see how big explosions affect aircraft shelters, ammunition bunkers and personnel shelters and barriers. "We'll test anything to do with explosives. I've seen a lot of things get blown up," said Mr. Terry Olsen, who has been the range safety officer for 22 years.

The Air Force also tests weapon systems at the range, like aircraft cannons and laser-guided bombs. "We make sure they work — give the Air Force the best bang for the buck," he said.

— Master Sgt. Louis Arana-Barradas (Reprinted with permission from April 2000 Airman magazine)



The good side of forest fires

Prescribed burning requires lots of planning, training and safety

As firefighters nationwide continue to battle the wildfires that so far have claimed more than 6.2 million acres across the United States, northwest Florida residents have been keeping a wary eye on their own woods this year.

Eglin Air Force Base, Fla., has experienced a year-long drought that has kept the fire management team busy chasing wildfires on the reservation's 724 square-miles, but they credit much of their success in keeping them under control to previous prescribed burns.

Although Eglin's prescribed burning program has been put on hold because of the drought, Col. Mike Newberry, Air Armament Center director of Environmental Management, said the science used before starting a controlled burn is in-depth, and as comprehensive as possible. And, Eglin's 27 qualified forest firefighters have more than 100 combined years of experience under their belts.

"Despite many drought periods over the last 10 years, we haven't lost a single structure to a wildfire, and much of that is due to using good science in our planning and maintaining an active prescribed burning program," said Col. Newberry.

Much of this is due to the training of the wildland firefighters. The process to become a qualified wildland firefighter combines specific, mandatory forest fire courses along with on-going practical training. Along with Eglin's team, the base has a mutual aid agreement with the local fire departments and state forest managers in this area.

Eglin's fire management section applies prescribed burns to an average of 40,000-60,000 acres per year for a variety of reasons including reducing wildfire danger, enhancing wildlife habitat and maintaining the longlife pine ecosystem.

According to natural resources fire section chief, Mr. James Furman, the planning begins many months before a prescribed burn is ever conducted.

"Last year, we studied the reservation and identified areas that are in need of fire and drew up 'burn blocks' for the areas we need to apply prescribed fire to," he said.

Burn block boundaries are selected by choosing easily defendable lines — large roadways, cleared areas, and streams, where firefighters can contain the fire to one specific area and best manage it with the least chance of allowing the fire to escape.

Once burn blocks are identified and prioritized, the fire management section must then schedule that part of the reservation for the burn.

"We have to schedule our burn missions the same way a customer would schedule an F-16 test on the reservation," Mr.

Furman said. “If there are missions already scheduled, or if smoke would be a problem for a mission that’s already scheduled, then we have to wait until the range is available again, and when the weather conditions remain favorable.”

If the burn block is available, Mr. Furman’s crew goes into action, using state-of-the-art computer programs to aid their planning and specially designed equipment built specifically for Eglin’s wildland firefighters.

“We use a program called ‘Behave’ that helps us determine if the weather conditions are favorable for the type of fire that’s been prescribed for the burn block,” he said. “Some locations require a very low, and slow fire for a variety of reasons, and Behave helps us determine if the forecasted atmospheric conditions will allow that type of fire.”

Another program the wildfire managers use is “V-Smoke.” The program takes all the weather data and produces a model of how high the smoke will go based on forecasted conditions. “As long as the forecast is accurate and the weather stays cooperative, the model is very valuable in helping us ensure that smoke stays high enough not to be an impact,” said Mr. Furman.

Among the other tools available to Eglin’s forest fire-fighting crews are the Keetch-Byram Drought Index, allowing the fire managers to determine how dry the area is. Also used are the remote area weather stations which feed valuable weather information pertinent to fire management.

For safety, the section has six tractor plows and transport units, seven engines, a 1,000 gallon water transport and a modified armored personnel carrier that can be used to suppress fires in areas with unexploded ordnance.

If all conditions are favorable, an experienced member of the fire team who is also certified as a “burn boss” puts together a burn package that includes maps, objectives, equipment to be used and smoke plume models, and distributes it to the team as well as area fire departments and emergency response crews.

Once the team is briefed by the burn boss, a prep crew goes to the area in advance to clear areas that may be of concern and clear fire breaks around the block. They also look for threatened and endangered species that could be impacted. All that is reported to the burn boss.

“The burn boss is responsible for taking all the considerations and ensuring that the prescription is correct to accomplish what we’re trying to achieve,” said Mr. Furman. “But there are enough safety measures in place to allow any member of the fire team to call a ‘no go’ if they see an unsafe situation.”

As a final precaution, the burn team ignites an area of less than one acre to determine if the models are accurate and the smoke goes in the direction predicted. If all results are good, the team then incrementally sets fire to the rest of the block.

According to Mr. Furman, the importance of safely applying prescribed fire to the forest is a top priority for the Eglin foresters. These burns ensure the forest doesn’t build-up dangerous fuels and keeps the base and surrounding communities safe from devasting wildfires.

“Fire must have fuel to burn,” he said, referring to debris on the forest floor and low-growth plants. “If there’s no fuel, there’s no fire. Too much fuel equals too much fire.”

— *Mr. Mike Spaits, AAC Environmental Public Affairs*

Bats patrol AEDC nighttime skies

At least seven species of bats are flying the night skies and feeding on insects at Arnold Air Force Base, Tenn. They forage on a variety of insects including mosquitoes.

Misunderstood animals

According to Mr. John Lamb, Arnold zoologist, bats are misunderstood animals. Folklore and movies, such as *Dracula*, often cast them in a villainous role when, in fact, they are very beneficial. A typical bat will eat more than 50 percent of its body weight in insects each night.

Bats are often perceived as a nuisance due to the risk of rabies. Although bats can contract and transmit rabies, the incidence of rabies in bats is very low and they do not usually become aggressive. In fact, fewer than 40 people are known to have contracted rabies from bats in the past 40 years, a minuscule number compared to those that have been killed by dog attacks, bee stings or lightning strikes.

"However, since it is possible for bats to carry rabies, they should never be handled especially those found on the ground, as they may be unhealthy," Mr. Lamb said.

Diverse habitats

Bat surveys are being conducted on Arnold to more fully understand the occurrence and distribution of bat species in diverse habitats. To date, seven species have been identified on Arnold out of the 13 species whose ranges overlap this area. The seven species are big brown bat, red bat, gray bat, northern long-eared bat, little brown bat, eastern pipistrelle and evening bat.

According to Mr. Lamb, mist netting is the most commonly used technique in bat surveys as the nets are used to intercept and capture flying bats. These nets are made from very fine nylon material that is difficult for bats to detect.

Endangered species

Of the 45 species of bats in the United States, six are considered to be in danger of extinction and 20 are considered to be of special concern by the U.S. Fish and Wildlife Service. The only endangered bat species currently at Arnold is the gray bat.

The gray bat was federally listed as endangered in 1976 because of declining numbers with the loss of habitat. The bats are endangered because they use caves for both summer homes and winter hibernation, and many caves suffer from human disturbance such as vandalism and commercialization.

Maintaining the Woods Reservoir gray bat population is just one aspect of the Arnold ecosystem environmental program.

"We consistently seek to better integrate the management of irreplaceable species such as the gray bat within the overall framework of Arnold's test mission," said Mr. Clark Brandon, deputy chief of the environmental management division.

— Mr. Marty Martin, AEDC Public Affairs

Great blue Haron calls AEDC home

Large blue birds with wingspans up to 6 feet are just one example of the many species of birds that summer at A rnold Air Force Base, Tenn. The great blue heron uses Arnold's Sinking Pond area to build nests, mate and raise their young.

The pond, located in the northern forest area, contains one of the largest great blue heron rookeries, which is a colony of birds, in Tennessee. More than 1,500 adult birds and another 1,500 fledglings call this area home in spring and early summer.

Rookery successes

This has not always been the case. The great blue heron, scientifically known as ardea herodias linnaeus, was placed on the Tennessee "in need of management" list in 1974 because of dwindling numbers. Due to successes in rookeries like Sinking Pond, the Tennessee Wildlife Resources Agency has delisted the species.

"The Sinking Pond colony enjoys protection from human disturbance and encroachment from developers," said Mr. John Lamb, Arnold zoologist. "These were two major causes of the decline of the bird population in the late 1960s and early 1970s."

Keeping their young safe

He said great blue herons like to build nests in trees like those in Sinking Pond where the water makes it difficult for predators to get to their eggs. They will recycle nests by simply repairing or adding to old ones from previous years.

The great blue heron is the largest member of the heron family in Tennessee; adult birds can reach 52 inches in height to go along with their 72-inch wingspan. This bluish-gray bird, with long legs for wading in water, can be distinguished from a crane when flying overhead by the way it folds its long neck in flight, while a crane will fly with its neck extended.

Great blue herons can be observed fishing in shallow water areas such as farm ponds, streams or lakes. Herons seen in surrounding counties are probably from the Sinking Pond rookery as they can wander up to 18 miles looking for food.

> ***"Our four counters wore hats and rain ponchos in self defense. Agitated herons have a habit of regurgitating on anyone approaching their nests."***
>
> **Mr. John Lamb, zoologist**

Growing numbers

According to Mr. Lamb, a member of the Tennessee Ornithological Society first counted the Sinking Pond rookery in 1965.

Twenty-five active nests were counted. Another count in 1988 by a member of the Tennessee Valley Authority listed 227 active nests.

Arnold's Environmental Management Division personnel conducted the latest observation June 15-18. Natural resources interns Mr. Geoff West, Ms. Laura Jennings, Mr. Brian Carver and Mr. Ryland Moore completed the census.

"We used canoes to travel quietly through the rookery to reduce disturbance to the nesting birds," Mr. Lamb said. "Not only did we count the number of nests, we logged the position of each nest and tagged and numbered each tree."

Wear a hat!

"Our four counters wore hats and rain ponchos in self-defense," he said. "Agitated herons have a habit of regurgitating on anyone approaching their nests."

Great blue heron nests were found in 319 trees containing 856 nests. Of these nests, 743 were determined to be active.

"This is a marked increase in the number of active nests," said Mr. Lamb. "We estimate there are 1,500 adult great blue herons nesting in the Sinking Pond area. Other studies have estimated that each mating pair will produce two offspring."

"Because the great blue heron is at the top of the food chain in wetland habitats, it can serve as a biological indicator of the health of our wetland ecosystem," he added. Arnold plans another heron inventory in two years.

— Mr. Marty Martin, AEDC Environmental Public Affairs

Site 96 contamination to be history

Erasing the damage caused by past practices doesn't mean getting rid of the past

Erasing the damage caused by past practices does not mean getting rid of the past.

At Site 96 on Edwards Air Force Base, Calif., cleanup and history go hand in hand. If you remove the contamination, you must be careful not to remove the history connected with the site.

One of over 460 Installation Restoration Program sites at Edwards, Site 96 is slated for cleanup of metals contamination discovered there.

What makes things a bit tricky is the site is also a cultural resource, creating a delicate situation for environmental engineers. Because South Base is rich in World War II history, there is almost a one-to-one relationship between potentially historic sites and restoration sites.

The restoration program and cultural resource management program, can appear completely opposite in their missions. Restoration intends to restore, while the cultural resources hopes to preserve.

It becomes a problem when cultural resources are trying to keep an area intact while the restoration program is trying to excavate the area's soil.

However, at Site 96, harmony is being reached while meeting the demands of both programs.

"If you look closer, you'll find we are both trying to preserve the integrity of the site," said Ms. Rebecca Hobbs, South Base project manager.

History

The Army Air Corps used the location in the early 1940s to park and service vehicles. It consists of approximately 45 acres north of Jones Road in the South Base area of Edwards.

Before it was a motor pool, the site was a homestead, where people lived from around 1915 until the early 1930s. Traces of their existence were left behind in the form of personal effects discovered at the homestead site including clothing, kitchenware, livestock barriers and a groundwater well. Railroad ties and spikes were found as well.

Significant sites

These objects are used in evaluating the significance of a cultural resource site. It is important to protect cultural resources and document their historical significance, in compliance with mandatory state and federal laws. The cleanup program must strike a balance to ensure compliance with all laws, including those that protect cultural and Native American interests and those that protect human health and the environment. To do both requires a more careful approach or cleanup method.

Cultural resource workers are available to ensure cultural resources receive the proper protection, barring any endangerment to personnel from exposure to hazardous materials. This is in compliance with federal laws designed to protect historically significant and irreplaceable resources.

Preventing damage

"We will consult with cultural resource management before any remediation equipment is allowed on site," said Ms. Hobbs. "We want to prevent unnecessary damage to potentially historical resources."

Field support and site management conducted prior to cleanup activities include utility clearance, laying out the area of excavation, debris disposal, and establishing temporary site control.

A cultural resource representative, providing onsite monitoring of a cleanup effort, can quickly identify anything that might be of concern to cultural resources so that fieldwork is not delayed any longer than necessary to protect the resource.

"The cultural resource specialists ensure nothing of significance is damaged or destroyed," Ms. Hobbs said.

"Our efforts to both preserve the historical resources at the site and restore the land to a non-hazardous condition will be nondestructive, as well as cost effective," she said.

Savings

Savings are made in the initial investigations with accurate data the engineers provide. By carefully identifying the types of contaminants, the level and extent of the contamination and the most effective method of implementing cleanup, the engineers are able to make progress. In this case, it causes no disruption to the site's cultural heritage.

The former motor pool generated

waste solvents as well as petroleum, oil and lubricants. Based on known past practices at other maintenance facilities on base where wastes have been discharged onto the ground surface, the unlined homestead dumps and the former reservoir were suspected areas of contamination.

Fieldwork

Fieldwork began in 1994 with soil gas samples indicating no hydrocarbon contamination. In early 1997, an additional soil investigation was conducted indicating extremely low amounts of trichloroethene, an industrial solvent, as well as a mixture of other contaminants, all below the industrial limits set by the U.S. Environmental Protection Agency.

The investigation also identified the presence of two metals, arsenic and beryllium. The levels of these metals were found to be above both industrial and residential regulatory limits. Excavation of the contaminated soil was recommended.

Because the contaminants are localized in the southeast corner of the site, the homestead itself will be unaffected by the cleanup effort.

Proposed action

"The proposed action is to excavate the contaminated soil and stabilize it on site by mixing it with a concrete slurry to trap the metals and keep them from migrating," said Ms. Hobbs. "This provides a barrier between the contamination and burrowing animals."

Once complete, the stabilized mixture will be placed back into the hole. Then the hole will be filled with enough clean soil to bring it to grade.

"Stabilizing the soil on site is a great cost-saving method," she added. "We are able to clean up the site without having to transport the contaminated soils to another location."

The work will begin as soon as the interim removal action work plan is completed.

Cleanup at Site 96 will be rapid and effective. As a result, history will be preserved, while contamination will be history.

— Mr. John Delaney, AFFTC Environmental Division

Photo on page 16 shows aircraft mechanics at work on a Lockheed P-38 Lightning, circa 1942.
Above: homesteaders Charlie Anderson and Ralph Wilkans dig a well, circa 1910.
Left: Refueling activities, circa 1944.

News Briefs

U.S. Air Force museum offers behind-the-scenes tours

WRIGHT-PATTERSON AIR FORCE BASE, Ohio — A popular attraction designed to grant individuals a more intimate view of ongoing exhibit design, restoration and collections management efforts at the U.S. Air Force Museum is now open for registration.

Interested individuals can register for the museum's fall "Behind the Scenes" tours, scheduled for October 6, November 3 and December 1.

Tours will take visitors to the museum's restoration, collections and exhibits areas located in hangars on the historic Wright Field flightline in Area B of the base, about one mile from the main museum building. Visitors will be able to see a variety of aircraft in varying stages of the restoration process, learn of some of the techniques used in exhibit construction and become acquainted with collections management processes.

Limited to 40 participants each, the tours are free and will last from 12:30 p.m. to 3:15 p.m. Registered

participants should meet in the museum's Carney Auditorium between 12:05 p.m. and 12:15 p.m. No group reservations are accepted.

Participants must be at least 12 years old; an adult must accompany those between ages 12 and 18. The museum will provide a bus to transport those on the tour to the hangars.

To make tour reservations or to get more information, call the Museum at (937) 255-3286, ext. 302 or 303. The U.S. Air Force Museum is located on Springfield Pike, six miles northeast of downtown Dayton.

— U.S. Air Force Museum Public Affairs report

Lab earns accreditation

EGLIN AIR FORCE BASE, Fla. — The 96th Medical Group here recently announced that both the College of American Pathologists and the American Association of Blood Banks have granted accreditation to its laboratory.

The College of American Pathologists is the world's largest association composed exclusively of pathologists. The American Association of Blood Banks is a leader in the development of standards for blood bank blood component collection, processing and transfusion.

"Accreditation is important for three reasons," said Col. Monica Figun, hospital commander. "First, it assures our patients and their providers that the laboratory provides a quality product. Secondly, it establishes our reputation in the military and civilian communities, and finally, accreditation recognizes and rewards our laboratory staff for the excellent work they perform."

Lt. Col. Steven Putbrese, flight commander for the pathology and clinical laboratory, said the laboratory had flawless results for both inspections.

Accreditation followed an intensive on-site assessment by representatives of each inspection agency.

"Inspectors examined the records and quality control of the laboratory for the preceding two years as well as the education and qualifications of the staff," Col. Putbrese said. The adequacy of the facilities, equipment, laboratory safety and laboratory management were examined to determine how well the laboratory services the patient.

— AAC Public Affairs report

MSG awards agreement

WRIGHT PATTERSON AIR FORCE BASE, Ohio. – In an effort to reduce task order cycle time and overhead, Headquarters Materiel Systems Group established blanket purchase agreements on July 27 for information technology services.

These purchase agreements support Electronic Systems Center's Central Design Activity, consisting of the MSG locations at Wright-Patterson AFB, its operating locations at Tinker AFB, Okla., and Hill AFB, Utah, and the Standard Systems Group at Maxwell AFB (Gunter Annex), Ala.

The blanket purchase agreements were issued to Computer Sciences Corporation, Fairborn, Ohio; DynCorp Information and Engineering Technology, Reston, Va.; Electronic Data Systems, Herndon, Va.; Intergraph Government Solutions, Huntsville, Ala.; Litton/PRC, McLean, Va.; and Science Applications International Corporation, San Diego, Calif.

The agreements cover five years, with the opportunity to earn up to three additional years depending upon their technical performance, cost, schedule, customer satisfaction and achievement of socio-economic goals.

— MSG Public Affairs report

Pacer CRAG debuts

ROBINS AIR FORCE BASE, Ga. — The 19th Air Refueling Group stepped into a new era July 6 as the first Pacer CRAG KC-135 arrived here.

The Pacer CRAG, or Compass Radar and Global Positioning System Program, represents the Air Force's commitment to modernizing the KC-135 refueling fleet to extend the functional life to 2040, the airframe's projected decommissioning date.

System modifications reduce the minimal crew to three through integrated electronic navigational systems. Other modifications include state-of-the-art color weather radar, improved compass and radar systems, an on-board global positioning system and an additional safety measure, the traffic collision avoidance system.

One of the most impressive modifications is multifunction displays, which allow pilots to monitor several aspects while concentrating on one control area. Air Force studies show Pacer CRAG modifications reduce annual maintenance costs by approximately $10 million.

The modifications are expected to extend the functional life of the KC-135 fleet while simultaneously increasing safety factors in a number of areas.

— 19th Air Refueling Group report

Air Force researchers develop switchable holographic materials

Somewhere in the future, an Air Force fighter pilot scouting potential "kills" will be able to strap on special eyeglasses that help him focus on external targets and the inner workings of his machine — by projecting all this data on his retina.

Thanks to scientists at the Air Force Research Laboratory's Materials and Manufacturing Technology Directorate. The directorate has worked with Science Applications International Corp., since 1991 to perfect holographic, polymer-dispersed, liquid crystal technology.

"These lightweight (2-3 ounce) eyeglasses will allow pilots to keep their eyes on the action, while watching fuel, airspeed and other data, plus related color images," explained Dr. Tim Bunning, aerospace materials engineer, in the directorate's hardened materials research section. "Besides giving Air Force warfighters an added, critical advantage in combat situations, we predict this technology will result in tremendous improvements in a wide range of visual communications products, including next-generation cellular telephone displays for the Internet; wearable displays for videos, game devices and personal computers; and projectors for business and rear-projection, High-Definition Television, for example."

"The bottom line: liquid crystals developed by the Air Force and SAIC offer unique features that could save pilots' lives in combat when decisions are made in split seconds," Dr. Bunning said. "And they will contribute greatly to eventual development and application of commercial products in a worldwide research market that today is fast approaching the $3 billion mark."

In August SAIC was granted an exclusive license to commercialize liquid crystal material originally developed for military applications. The Air Force and SAIC jointly received a U.S. patent on the material in August 1999.

— Ms. Sue Baker, ASC Public Affairs

Fitting a square peg in a round hole

It isn't as difficult as trying to force a square peg into a round hole, but it's close. There are easier tasks than trying to get an airplane with a 213-foot wingspan through a door that is only 203 feet wide.

The crew involved included representatives from the Airborne Laser System Program Office, Detachment 2 of the Flight Test Center, Boeing, Edwards Air Force Base, Calif., Sandia National Laboratories, the Boeing Commercial Airline Group and the Federal Aviation Administration. They all were sweltering on the tarmac Aug. 3 practicing a maneuver they will have to put into practice when the world's first completely laser-armed combat aircraft reports for flight tests at Edwards in about two years.

While at Edwards, the 747-400F will be housed in a hangar at the Birk Test Flight Facility in between flying missions, a condition made necessary because of the high summertime temperatures at Edwards and the heat-sensitivity of some of the airborne laser's unique equipment. During the summer, it is not unusual for tarmac readings at Edwards to approach 120 degrees Fahrenheit.

When the hangar was built at Birk there were no planes as large as the 747-400, therefore the doors are not wide enough to allow the plane to be pulled straight into the shelter. So the specially-trained maintenance crew will have to "crab" it in tail first, at an angle. The procedure is roughly equivalent to backing an sports utility vehicle-sized trailer into a garage whose door was built to accommodate a Volkswagen.

As the first step toward developing a procedure to accomplish the task, maintenance crews and engineers outlined the dimensions of the Birk hangar on an unused section of the flight line with duct tape and orange construction barrels. Then, using powerful aircraft tow tugs, they angled the tail of a 747-100 being used as a demonstrator through the simulated "doors."

With the 747 tail almost halfway in, the maintenance crews removed a 2 ¼-inch lock pin from the body gear assembly and swiveled the wheels into a 36-degree angle, leaving the under-wing gear wheels in their normal position. Once the "slant" was set, the tugs pulled the aircraft inside. The procedure was reversed to bring the aircraft out.

The towing practice was only one of numerous tests and practices scheduled for the ABL before the aircraft, which currently is being modified at the Boeing facility in Wichita, Kan., begins shooting down missiles in 2003.

— AFFTC Public Affairs report

Master Sgt. Mark Hall demonstrates how a lockpin has to be removed from a 747 gear assembly, allowing the wheels to rotate so the plane can be towed into a hangar whose doors are not wide enough to accommodate the aircraft's wingspan.

B-1B fly-in program speeds modifications

One group of Tinker's work force is doing whatever it takes to ensure congressionally mandated modifications are made to the B-1B aircraft in a timely manner.

Through the B-1 Fly-in Program, approximately 120 workers are installing the global positioning system on 45 B-1Bs — a modification that will provide a better navigation system and a more accurate weapons delivery and tracking system.

The actual aircraft modification started in 1998 with Tinker completing seven aircraft during the regularly scheduled programmed depot maintenance. In 1999, 10 B-1B fly-in aircraft received the system modification. The number of fly-in aircraft jumped to 35 for 2000.

Specialized tasks

The fly-in program consists of a multitude of specialized maintenance tasks including the addition of 37,000 wire segments, the removal of more than 200 major components and an average of 43 days of operational checks.

These modifications are accomplished almost entirely on the flightline with a team of technicians involving avionics, electrical, aircraft and sheet metal mechanics.

According to Mr. Ben Doherty, B-1B avionics unit chief, approximately 7,000 man-hours per aircraft are being expended performing this modification and checkout. "The reason we can handle so many of these aircraft through the fly-in program is that we're very focused and our technicians are working extremely hard under difficult conditions.

"At the same time," he said, "it's been a challenge to hire and train new mechanics to handle this significant increase in workload."

Team work

To assist the civilian work force, a nine-member team of active duty Air Force technicians was brought in from Ellsworth Air Force Base, S.D.; Mountain Home AFB, Idaho, and Dyess AFB, Texas. This team is very specialized in the individual fields on the B-1B aircraft.

"We brought in technicians specialized in instruments, auto- pilot and defensive avionics and crew chiefs," said Master Sgt. William Hammond, team lead for the supplemental team, and an expeditor at Ellsworth. "We bring operational knowledge and experience we've learned over the years to make the repairs easier. We've been able to share that knowledge with the Tinker technicians to expedite some repairs."

With the help of the supplemental team, the fly-in program work force was able to take the first full non-holiday weekend off in more than 12 months, said Mr. Doherty. "We have people working the fly-in program in two shifts and we've been working 12 hours a day, seven days a week."

Working side-by-side

Having the active duty supplemental team working side-by-side with the Tinker work force is beneficial in more ways than just allowing a focused global positioning system modification installation and checkout.

According to Mr. Doherty, the team and Tinker are working together to find new and more efficient ways to perform some maintenance.

"We operate repairs at a much faster pace," said Sgt. Hammond. "We have to fix the problem now, whatever it happens to be. That means our focus is more concentrated.

"This depot experience has given us a new insight," Sgt. Hammond said. "The biggest difference is these technicians work all systems, whereas we're working one system."

The supplemental team will see the fly-in program through their peak aircraft flow and then return to their respective bases early this fall.

If needed, Air Combat Command committed to provide three 30-day teams to assist in the modification process. "In fact, some team members have volunteered to stay longer if we need them," said Mr. Doherty. "We've been very impressed with their expertise and knowledge and the way they've jumped in to help in any way they can."

"Our team will take back a knowledge of what this depot does and what they give us, the customer," said Sgt. Hammond. "We're always hearing that the plane is in depot, but we never knew the level of work being accomplished in a depot. Now we do. It gives us a better appreciation of what actually goes on here to make sure aircraft are mission ready."

— Ms. Gail Kalhavy, OC-ALC Public Affairs

Teaching children to DEFY

Drug education for youth helps students stay on the right track

About a dozen rambunctious youngsters piled out of vans in the parking lot of Phoenix House on Warner Robins Air Force Base, Ga., Aug. 2. However, horseplay quickly ceased when a burly counselor ordered two particularly rowdy boys to drop to the ground and do push-ups.

After lining the children up single file, the mentors issued a "Fo'ard, MARCH!" command. The children trooped off in good order to the classroom building.

They were among 38 children participating in the eight-day Drug Education For Youth summer camp for children ages 9 through 12.

Teamwork

Following a classroom session on safety and motivation, the children were put through a rope course where they had to cross a rope suspended between two tall scaffoldings, holding on to ropes hanging at intervals from above.

Teamwork was a large part of the lesson, as one child would hand the ropes over to another as they crossed. The children also slid down rope slides, climbed walls and crossed logs. The children wore helmets and were harnessed to safety ropes so they were in no danger.

"It's all about learning teamwork and building self-confidence," said Senior Master Sgt. David Coleman, 78th Communications Squadron, a DEFY counselor.

Twenty of the children were from Macon and the rest were military dependents from Robins, Sgt. Coleman said. "It's directed at those who are at risk but it's for everybody."

Taking control of their lives

DEFY coordinator Ms. Pam Lightsey said the purpose of the program is "to help these children keep off drugs and out of gangs. They learn life skills that help them do that, and they have wonderful mentors who will continue with them through the school year. They'll meet once a month and go on workshops and field trips."

DEFY began as part of the Drug Demand Reduction Task Force established in 1992 by the Secretary of the Navy. In 1996 the Justice Department formed a partnership between DEFY and its Weed and Seed Communities.

"In Weed and Seed, city government and residents take back the neighborhood," said Ms. Lightsey. "The 'weed' part means uprooting the drugs and gangs, and 'seed' means restoration and revitalization of the community."

Weed and Seed communities in Georgia that have military bases can take part in DEFY. In addition to Robins, these programs include the Marine base at Albany, Athens Naval School and Moody AFB in Valdosta.

Ms. Lightsey, who has been coordinating the program for three years, said the Robins mentors impressed her.

"They're awesome. You wouldn't know it was their first year doing it," she said. The mentors consisted of volunteers from the Macon Police Department and Robins.

Mr. Jim MacDonald, of the Macon Police Department, gets a hug from DEFY camper Nazon Johnson. The camp was held at Robins Air Force Base, Ga., in August, teaching children about teamwork and building self-confidence. (Photo by Ms. Sue Sapp, WR-ALC)

DEFY camp director 2nd Lt. John Armstrong said that during the 8-day camp, "They learned about how to keep away from drugs and gangs and know how to say 'no.' I told them at the beginning I wanted them to make me happy. They have, absolutely."

According to a DEFY brochure, the program's curriculum, which combines classroom study, games and field trips, develops skills such as goal-setting, team-building, conflict resolution and decision making. Its curriculum is based on two decades of research on key characteristics of successful prevention programs identified by the U.S. Department of Health and Human Services.

Positive results

A study by the Pennsylvania State University in 1996 demonstrated DEFY produced positive results in resistance skills, social behavior, drug knowledge and attitudes toward gangs, smoking and alcohol.

At the graduation ceremony, 78th Air Base Wing Vice-Commander Col. William J. Heinen told the children, "You are here because people care about you. I ask you to care about yourself and draw on your strengths."

— *Mr. Hal McKenzie, WR-ALC Public Affairs*

Cooperation, not competition, is the key to supporting the warfighter

As part of an alliance betweeen the Air Force Flight Test Center and NASA Dryden Flight Research Center, the two units can cross-utilize resources such as people and aircraft. Last year, Maj. Dawn Dunlop from the 445th Flight Test Squadron flew sorties in a Dryden F-15 with NASA's Ms. Dana Purifoy. (NASA photo)

To ensure U.S. warfighters operate proven weapon systems, the Air Force Flight Test Center at Edwards Air Force Base, Calif., advocates a direct philosophy when working with others in the testing world: cooperation, not competition.

Unfortunately, however, the age of the Base Closure and Realignment Commission can pit members of a tight-knit community against each other, which is "unhealthy," said Col. Perry Lamy, commander of the 412th Test Wing. This is especially true if a unit's main focus keys on snagging work and not necessarily delivering the best product possible.

"Simply competing for workload is a zero-sum game," he said. "If someone else gets the work that I wanted, I lose. If I get the work that they wanted, they lose."

Partnering

Instead of simply grabbing jobs because they are there, Col. Lamy believes Edward's emphasis should be on developing warfighting capabilities.

How? By partnering with other test and evaluation organizations, such as the 46th Test Wing at Eglin AFB, Fla., which assesses defensive weapons.

"You have to look at it as a continuum," he said. "You look at what Eglin brings to the table and what Edwards brings to the table. Together, we are much stronger. So the incentive should be to partner, not compete."

Col. Lamy's longtime friend, Col. David Eichhorn, the 46th TW commander, agrees. He calls Edwards and Eglin "one team at two bases" that must deal with a shortage of pilots and engineers.

"We are striving for unprecedented cooperation to effectively and efficiently deal with high-priority programs," Col. Eichhorn said. "We believe we can make the most of the limited resources we have through increased cooperation, not competition."

Indeed, cooperation, collaboration and jointness are absolutely essential to U.S. war-fighting capability in the 21st century, whether that means putting bombs on target, troops in the field or new aircraft on the flightline, said Maj. Gen. Richard Reynolds, AFFTC commander.

As Gen. Reynolds pointed out, the days of "going it alone" in the modernization business are gone forever because of challenges of an increasing complexity of new systems, a shrinking infrastructure and declining workforce.

"That's as true for test work as it is for any other area of our nation's military might," he said. "What we can achieve in the name of developing combat capability through partnerships with other AFMC centers, other major commands, our sister-service test and evaluation partners, and even private industry is far and away greater than what we can do alone. I find that tremendously exciting."

Reducing turnaround time

Another case of Edwards cooperating with others to answer a warfighter's need is the Advanced Flight Propulsion Data Validation and Analysis System, which is being used here and at Arnold AFB, Tenn.

The system is an F-22 Raptor modeling and simulation tool that reduces data turnaround time, lowers costs and enhances data quality. Both Edwards and Arnold use it to make quick, accurate predictions of in-flight propulsion characteristics.

Plus, it has delivered "an example in which all test centers must work together, applying coordinated test techniques and planning to give the F-22 program the most cost-effective and efficient support," said Col. Craig Christen, director of operations at Arnold.

Sharing airspace

Because Edwards is in the flight-test business, it obviously needs lots of room to fly the most powerful aircraft in the world. Consequently, it shares vital airspace with neighboring military units, such as the Naval Air Weapons Station in China Lake, Calif. There, Edwards aircrews fire or drop munitions when testing fighters and bombers.

NAWS pilots use Edwards' airspace for some naval flight-testing. This relationship "...leads to the best value for the taxpayer," said Rear Adm. Bert Johnston, NAWS commander.

To improve synergy and interoperability between western test sites, Edwards has developed an acquisition strategy that supports a single support contract for restricted airspace at the Nevada Test and Training Range, the Utah Test and Training Range and China Lake's electronic combat ranges.

Called joint range technical support, the consolidation is anticipated to obtain previously unattainable efficiencies, cost savings and partnering with industry, said Mr. Ron Davino of the 412th Test Wing. This initiative is expected to advance

combat readiness through improved range developmental test and evaluation interoperability and provide for a more realistic, high-fidelity training environment for the warfighter.

Complimentary missions

Edwards primary contribution to the warfighter results from developmental test and evaluation — the bedrock of the center's existence, serving as a bridge between system designers and operational test and evaluation units at places such as Eglin and Nellis AFB, Nev.

The missions here and other test and evaluation sites are complimentary, said Maj. Gen. L.D. Johnston, commander of the Air Warfare Center at Nellis.

"Edwards ensures America's aerospace assets are tested to meet design specifications and safety standards," Gen. Johnston said. "Our Air Combat Command wings at Nellis determine the best way to operationally test and employ those assets and their weapons."

Whether it's developmental or operational test and evaluation, highly trained test pilots, test navigators and test engineers always are going to be needed to push the newest aircraft to their flight envelope. Providing that pipeline of talent is the U.S. Air Force Test Pilot School here.

And once again, collaboration contributes to Edwards meeting its mission.

Healthy competitors

Close working relationships with the U.S. Naval Test Pilot School and ones in England and France are "absolutely vital for us," said Col. Steve Cameron, commander of the Air Force Test Pilot School.

"We consider our sister schools worthy benchmarks… healthy competitors if you will," Col. Cameron said. He believes a continued cooperation is mutually beneficial in the same sense as training partners for an athletic contest.

"The very best training partners are ones who perform at the same level and keep pushing you to maintain the highest standards of excellence," he said. "Test pilot school is proud of the wonderful atmosphere we have between the top four military test pilot schools in the free world."

Closer to home, Edwards has formed another cooperative union, called the Alliance, with NASA's Dryden Flight Research Center and the Air Force Research Laboratory Propulsion Directorate, both of which are located at Edwards.

Started in 1995, the Alliance has yielded nearly $3 million in savings and roughly $15 million in cost avoidance.

"The Alliance is an outstanding example of interagency collaboration," said Mr. Kevin Petersen, director of Dryden. "It not only has produced tangible cost savings for NASA and Edwards, but has also instilled a real teamwork attitude at all levels in the organizations, producing many intangible benefits as well."

Leveraging strengths

As with all such partnerships that Edwards strives to maintain, they key is leveraging off each other's strength, Col. Lamy said. "We all have to understand each other's capabilities. That way we can provide a customer — especially the warfighter — a full spectrum of service."

As for the future, Gen. Reynolds said his policy, as AFFTC commander, is to reach out, build bridges and get the test job done better, faster and at a lower cost.

"That's our future — that's what we at Edwards need to do for America."

— Mr. Ray Johnson, AFFTC Public Affairs

Rising from the ashes

Fire-damaged F-15E flies again

Maj. Kevin Coleman of the 339th Flight Test Squadron at Robins Air Force Base, Ga., took an F-15E Strike Eagle for a functional check flight in July, a routine job for him. The crowd of airmen and civilians who gathered to watch and cheer the takeoff, however, showed that there was something special about this jet.

A score of airmen from the 653rd Combat Logistics Support Squadron watched the flight because they had helped repair and rebuild the jet after it suffered a devastating engine fire on takeoff from Royal Air Force Lakenheath, England, in October 1998.

Master Sgt. William Wallace, 653rd CLSS crew chief, said that as the jet prepared for takeoff, "The engine came apart and the blades went through the wall of the fuselage and ruptured a fuel tank, burning out the right side engine," and causing extensive damage. The pilot escaped unhurt.

The jet was dismantled and brought to Robins in a C-5. The CLSS got involved in May 1999, Sgt. Wallace said. It was a unique and valuable experience for the "White Knights," who specialize in battle damage repair. "We needed the extra training in heavy system repair," he said.

Sgt. Wallace estimated that 25 percent of the jet had to be replaced outright, and finding the replacement parts was not easy. Some parts came from other jets and others were made from scratch by the technology and industrial support directorate.

Mr. Van Hill, periodic depot maintenance supervisor with the F-15 system program office, coordinated much of the work, and numerous structural technicians, aircraft mechanics and supply personnel played key roles. "The whole directorate was involved," Sgt. Wallace said.

Their original estimate for completing the repair was 18 months, but it was completed in a year. "It took approximately 10,000 man hours and cost $1.5 million, a bargain considering the $50 million cost of the plane," he said.

As airmen lined the runway to cheer it on, the F-15E taxied into takeoff position, sped down the runway and roared skyward in a max performance takeoff. Within seconds, it was lost to view in the clouds.

— Mr. Hal McKenzie, WR-ALC Public Affairs

Members of the 653rd Combat Logistics Support Squadron give a crew chief salute to an F-15E as it is taxied out for a final flight test. The aircraft suffered severe fire damage at Royal Air Force Lakenheath, England, and was repaired at the Warner Robins Air Logistics Center, Ga.

The Right Stuff

Eight AFMC officers selected for astronaut training

Eight officers stationed at Air Force Materiel Command installations are taking one giant leap toward making their dreams of space travel come true.

Selected from Eglin Air Force Base, Fla., are: Lt. Col. Ronald J. Garan Jr., 40th Flight Test Squadron; Maj. Eric Boe, Air-to-Air Missile Test Division; Maj. B. Alvin Drew, 46th Operations Group; and Maj. Michael Good, 46th Operations Support Squadron.

Selected from Edwards AFB, Calif, are: Lt. Col. Kevin Ford, U.S. Air Force Test Pilot School; Navy Lt. Cmdr. Barry Wilmore, F-22 program; Maj. Terry Virts, 416th Flight Test Squadron; and Capt. Bob Behnken, F-22 Combined Test Force.

NASA selected 17 candidates in the class of 2000 from a pool of more than 3,000 applicants. A total of seven Air Force officers were selected, all from AFMC. The class consists of seven pilots and 10 mission specialist candidates.

The astronaut candidates were selected through a highly competitive evaluation process.

The Astronaut Selection Board interviews each applicant and assigns him or her a rating based on education, training, experience and potential, motivation, communication skills, adaptability and ability to function as a member of a team.

Following the initial period of training and evaluation, the astronaut candidates will receive technical assignments and continue training in preparation for a space flight assignment.

And even though being named an astronaut candidate doesn't guarantee a trip to the cosmos — or even being selected as an astronaut for that matter — the AFMC candidates remain confident that they will venture there one day.

By weeding through thousands of applicants, Capt. Behnken noted NASA does a "pretty good job" of identifying people that they believe will pass the program, leading to participation in a space mission.

"I'm not worried about not making it," Lt. Cmdr. Wilmore said.

Maj. B. Alvin Drew is not worried about being a part of any space mission.

"There are always risks involved with any mission," he said. "But in terms of fear, you just put it in the back of your mind and you take precautions."

"I can still remember my parents calling me into the living room to watch the Apollo landing on our black and white TV," said Maj. Boe. "This has been my lifelong dream."

For Maj. Boe, the greatest challenge will be waiting for an assignment because it could take up to three years. But the wait will be worth it, he said.

"You sit back on the porch," he said. "You look up in the night sky, watch the stars, and you can't believe that you'll actually get up there and orbit the earth or go to the moon or Mars. It's an indescribable feeling. I'm truly blessed, and I'm honored to be able to serve my country in this capacity."

— Compiled from stories by Mr. Ray Johnson, AFFTC Public Affairs and Lt. Jennifer Snyder, AFMC Public Affairs

Lt. Col. Kevin Ford, U.S. Air Force Test Pilot School, Edwards AFB, Calif.

Lt. Cmdr. Barry Wilmore, F-22 program, Edwards AFB, Calif.

(From left to right) Lt. Col. Ronald Garan Jr., Joint Air-to-Air Surface Standoff Missile test director, Maj. Michael Good, operations/F-15 weapons test officer with the 46th Operations Support Squadron and Maj. B. Alvin Drew, 46th Operations Group, Detachment 1 commander. All three are stationed at Eglin AFB, Fla.

Blazing the trail for land managment and conservation

Unlike some people who are 'lost in the woods of life,' Mr. Kevin Porteck is one of a few who truly can "see the forest for the trees."

This forester, stationed at the Air Force Center for Environmental Excellence, Brooks Air Force Base, Texas, knows that not heeding nature's warning signs can be costly, as evidenced by the devastating western wildfires that have focused national attention on the efficiency of controlled burning.

As the Air Force point of contact for controlled burns, he hopes base commanders are not dissuaded from using them as a land management tool in the wake of the New Mexico wildfires ignited by a National Park Service controlled burn.

Currently there is no Department of Defense policy governing training standards and quality control for prescribed burns. While a multi-service group has made recommendations on standards not yet adopted, the Air Force nevertheless has been a leader in wild-land fire management.

Maintaining Air Force lands

The 44-year-old Dallas, Texas, native is the forestry program manager responsible for maintaining Air Force forests and woodlands worldwide. He has, along with a dozen other Air Force foresters, helped establish the Air Force as one of the world's leading organizations dedicated to preserving natural habitats for many endangered species.

"Our number one mandate is to support the Air Force mission when managing natural resources," he said. "In ecosystem management, we look at the whole instead of its parts: the effects of our activities on the ecosystem. That includes forests and the species that live within them."

"The challenge of being a natural resources manager is protecting biodiversity with the military mission," he said. "In the Air Force, the mission comes first."

Nevertheless, Mr. Porteck has been sensitive to the needs of mother earth and mankind as a lifelong naturalist and forest conservationist. "My specialty is silviculture, the art and science of growing trees."

He became interested in forestry as a child living with his parents on 93 acres in Cooke County, Texas. He launched his full-time forestry career in 1984 with the U.S. Forest Service, and became an Air Force forester in 1997.

Since then, he has managed a vast, diverse Air Force conservation program that includes the forestry program product sales, agriculture program and wildlife program.

"The Air Force has an estimated 744,000 acres of forest," he said. "My job is managing reimbursable budgets."

The many conservation and land management programs he is responsible for are self-supported through commercial leases. Last year, the Air Force earned $3.5 million from the sale of forest products including timber and agricultural program products such as herbs and seeds. Livestock grazing and commercial crop leases generated additional revenue.

"Forty percent of our net forestry program proceeds are given to counties as required 'payment in lieu of taxes'," he said. Remaining revenues fund Air Force habitat improvement projects.

Endangered species

"DOD has the least amount of forest acreage of any federal land management agency, but the highest number of endangered species," he said. "Air Force land is a refuge due to limited public access, minimal habitat impact and effective habitat management. Rare species, such as Florida's grasshopper sparrow, thrive on Air Force land.

Mr. Kevin Porteck, AFCEE forestry program manager, in a stand of large cottonwood trees on DOD land in Louisiana.

"The sparrow is a grassland species living in a largely forested state," he said. "The bird loves our bomb range because of the grasslands." The animals' grassland habitat is re-generated through controlled burning.

Controlled burning also helps prevent the spread of plant and animal disease. "Southern pine beetle, gypsy moth and mountain pine beetle kill trees," he said. "The best way to control insects and disease is to manage forest health, and doing so often includes tree cutting, controlled burns and other management practices."

Mr. Porteck advises commanders on the control of non-native species that become nuisances, ranging from Chinese tallow trees at Eglin AFB, Fla. to noxious yellow star thistle weed at Beale AFB, Calif. He also helps develop innovative solutions to controlling native species, especially useful when resolving a critically important Air Force issue: bird strikes.

"We're going to build artificial burrows for burrowing owls away from the flightline at Holloman AFB, N.M.," he said of a planned feasibility study.

Forest reforestation

Mr. Porteck is also an Air Force land reforestation advocate. A popular misconception is that our nation's forests are dwindling. "From 1900 to 2000 the U.S. forest area has increased," he said. The Air Force has contributed to this habitat-building trend through such programs as restoring Florida's long leaf pine at Eglin. Last year, the Air Force planted 3,791 acres of the species.

Replenishing tree cover within the developed portions of Air Force bases is also one of Mr. Porteck's program initiatives. "Our bases could significantly reduce utility costs if they use vegetation more creatively," he says when referring to the proven practice of planting trees near buildings.

He believes maintaining balance in nature will ultimately have a positive impact on humanity.

"You can have biodiversity and human activity simultaneously," he said. "Setting aside wilderness preserves is not the only answer. The answer is how well you manage the land around human activity."

— Mr. Rudy Purificato, 311th Human Systems Wing

Eglin test team takes top honors

EGLIN AIR FORCE BASE, Fla. — The 46th Test Squadron's Defensive Systems Test Team was recently named the Air Force Test Team of the Year.

According to Capt. Rick Dennery, defensive systems test flight commander, the team's role is developmental — aid with operational testing and some life-cycle testing and protecting combat aircrews against ground-based and air-based threats.

The team was selected for the award based on its superb performance during 1999, particularly during Operation Allied Force.

In 1999, the team tested 21 defensive systems, roughly a third more than a normal year, Capt. Dennery said. The team also tested systems for nine airframes, and during Operation Allied Force, completed three quick reaction tests.

One of the quick reaction tests required the team to examine the HH-60G Blackhawk Self-Protection System. It took only 21 days from the time they were notified of the test requirement until they had data in the users' hands. During the three-week period, the team orchestrated 15 sorties to test the Blackhawk's integrated missile warning sensor, infrared jammer and flare dispenser, while receiving no relief from its normal test load.

"We just put in a lot of long hours to get those three tests off," said Capt. Dennery. "We like using our capabilities to make sure the aircrews have the best protection we can give them."

According to Lt. Col. Mark Erickson, 46th Test Squadron commander, knowing combat aircrews immediately used the results of the tests made the intense work rewarding for the team. "That's what makes it all worthwhile — to see some direct benefit to the warfighter."

— AAC Public Affairs report

AFA's top award: The "Citation of Honor"

EGLIN AIR FORCE BASE, Fla. — The national president of the Air Force Association has named Senior Master Sgt. Anselmo A. Castillo as the "Citation of Honor" award winner, AFA's highest award given to an individual for outstanding performance.

Sgt. Anselmo "Tony" Castillo distinguished himself as the fuels superintendent, 96th Supply Squadron. He controlled over 50 million gallons in on-hand aviation and ground fuels and managed more than $96 million in equipment items, providing superior customer support over Eglin's 724-square mile reservation.

During a five-week repair of nearby Hurlburt Field's fuel system, he ensured 700,000 gallons of JP-8 jet fuel support to sustain the Air Force Special Operations Command's flying mission for 1,200 sorties.

Sgt. Castillo also orchestrated outstanding fuel support to a joint Air Force and Army exercise at a missile testing program site. He dispatched equipment and personnel to support refueling efforts for 30 helicopters without compromising mission or safety.

He was a key contributor to Eglin's Fuels Flight's winning the 1999 Chief Master Sgt. Willie B. Harris American Petroleum Institute Award signifying the 96th as the "Best of the Best" in AFMC. He also won the 1999 Lance P. Sijan Leadership Award recognizing him as an innovative pacesetter.

Sgt. Castillo volunteers his time in many different ways. He helped with the "Adopt a Road" program, participated in the American Cancer Society's "Walk for Life" walk-a-thon, coached a Northwest Florida Special Olympics team, raised funds for the Leukemia Society and led a church fund-raiser to get musical instruments for their choir. When he's not busy doing all these other things you can find him at several base-wide events volunteering his talents by singing the national anthem.

— AAC/LG report

Reservist recognized at Air War College

TINKER AIR FORCE BASE, Okla. — Lt. Col. Loraine Simard, senior mobilization assistant to the Oklahoma City Air Logistic Center's Aircraft Production Division, is the first recipient of the Lt. Gen. John M. Nowak Award in recognition of her performance at Air War College.

Col. Simard is the first reservist in the history of Air War College to win a major award and was one of only seven reservists selected to attend in residence last year.

Col. Simard is developing an approach to performance planning to improve aircraft production.

"She's smart, she's a ball of energy," said Col. Rick Matthews, director, aircraft production division, "and I'm thrilled to have her on my team. Col. Simard is an outstanding officer and a credit to the Air Force."

Before joining Team Tinker in a full-time capacity in 1999, Col. Simard was the materials manager for Entergy Fossil Inc., a public utility company. She was responsible for $80 million in spare parts, supporting 22 power plants. While employed by Entergy, she was in the midst of an active Air Force Reserve career.

Col. Simard commanded the 917th Maintenance Squadron at Barksdale AFB, La., from 1996 to 1997, then served as the vice commander of the 917th Logistics Group there from 1997 to 1998.

While on active duty, she earned a degree in International Logistics from the Air Force Institute of Technology and participated in Air Force Logistics Command's Logistics Career Broadening Program where she had an opportunity to work with senior management in each logistics directorate.

— OC-ALC Public Affairs report

Milstar II wins top engineering award

LOS ANGELES AIR FORCE BASE, Calif. — The Department of Defense presented its 1999 Value Engineering Achievement Award for Program Management to the Milstar II program office here for saving the government $28 million through 58 cost-reduction initiatives.

Dr. Jacques S. Gansler, undersecretary of defense for acquisition, technology and logistics, presented the award to Brig. Gen. Craig Cooning, MILSATCOM Joint Program Office director.

Others recognized at the Washington ceremony were Ms. Melinda Richmond, price analyst, and Milstar II project officers Capt. Mark Skosich and 1st Lt. Arnold Johnson.

"The key to the Milstar II Program office's value engineering effort success has been the ability to encourage innovation, leverage the commercial marketplace benefits and maximize the

Gen. Lyles receives prestigious AFA award

LOS ANGELES AIR FORCE BASE, Calif. — Air Force Materiel Command's top officer received the 2000 General Bernard A. Schriever Award for outstanding achievement in support of Air Force missile and space programs Aug. 25 at the Los Angeles Airport Marriott Hotel.

Gen. Lester Lyles was honored during the annual "Salute to Space and Missile Systems Center" awards dinner hosted by the Air Force Association General Bernard A. Schriever Los Angeles Chapter 147. The Schriever award is the chapter's highest accolade.

"Not since Gen. Schriever have we had a four-star general so well-versed in the space business," said retired Air Force Maj. Gen. Wesley Clark, AFA Schriever chapter president. "He is a strong advocate for space systems acquisition both within the Air Force and the congressional realm."

As a second lieutenant, Gen. Lyles started his career as a propulsion and structures engineer at the standard space-launch vehicles program office at Los Angeles Air Force Station. In 1974, he became the program element monitor for the short-range attack missile in Washington D.C.

In 1987, he returned to Los Angeles Air Force Station as a colonel and served as director of the medium launch vehicles program office and the assistant deputy commander for launch systems.

In 1994, he became the commander of the Space and Missile Systems Center. Before serving in his present position as AFMC commander, he spent nearly three years as the Ballistic Missile Defense Organization director and almost one year as Air Force vice chief of staff in Washington D.C.

"To some extent, I see this award as an obligation — an obligation to continue the fight and the determination to show excellence in everything we do — especially in space," Gen. Lyles said. "I will continue to dedicate myself to continue the push for space programs and excellence for the United States Air Force. Thank you again. This is a wonderful recognition and I am very proud to receive it."

— Space and Missile Systems Center Public Affairs report

Gen. Lester Lyles (Photo by SSgt. Angela Stafford, SAF/PAI)

application of best business practices," said Gen. Cooning. "Aside from just the money saved, we've seen many other positive effects for the program. This includes finding smarter, more flexible ways to meet program goals, mitigating the delays caused by unexpected, unpredictable events in other areas of the program and discovering potential flaws before they ever become a significant issue."

Milstar II innovative cost reduction initiatives are implemented at all levels of management and supervision within the program.

"The contractor has effective, empowered teams with the authority to implement, follow-up and refine cost savings," said Capt. Skosich. "Most of the cost savings and cost avoidance are reflected in the predicted total cost of the entire project. In addition to assessing performance against what we expected, we also have a separate category that reviews innovative thinking that is beyond expected performance and results in saving money on the overall Milstar contract."

The value engineering award program is a highly visible acknowledgment of exemplary achievements and encourages additional projects to improve in-house and contractor productivity, according to Capt. Skosich.

An award winner from each DOD component was eligible for selection in the following seven categories: program management; individual or team; procurement and contract administration; value engineering professional; field command; installation and contractor. Additional "special" awards were given to recognize innovative applications or approaches that expanded the traditional scope of value engineering use.

This year, only five program management awards were given DOD-wide, and Milstar II was the only Air Force office to receive the award. In all categories, 31 awards were given and the Air Force received five.

— SMC Public Affairs report

Scientist earns top Air Force research award

BROOKS AIR FORCE BASE, Texas — Research that led to the establishment of the first international laser safety standard has earned Air Force chief scientist Dr. Benjamin Rockwell the prestigious Air Force Basic Research Award.

Dr. Rockwell is a senior research biophysicist for the Air Force Research Laboratory Human Effectiveness Directorate's Directed Energy Bioeffects Division here.

He earned the award based on his research team's work expanding understanding of ocular hazards associated with newly-developed ultrashort pulsed lasers, specifically those posing a laser eye damage threat to military personnel.

"For the first time, the world has standards for laser exposure at the ultrashort range," said Lt. Col. Leon McLin, Jr., chief of AFRL Human Effectiveness Directorate's Optical Radiation Branch. "Based on Dr. Rockwell's group's research, the American National Standards Institute has adopted laser safety standards."

Dr. Rockwell's team spent seven years improving safety standards. Previously, there were no good exposure levels in the one nanosecond (one billionth of a second) range.

His work will impact ultrashort laser technology used in medicine, industry and aviation. Specifically affected are laser safety procedures used in eye surgery involving corneal incisions for refractive correction, in micromachinery to create small features in solid materials and in helicopter navigation using laser infrared detection and ranging to detect power lines.

— Reported by Mr. Rudy Purificato, 311th HSW