

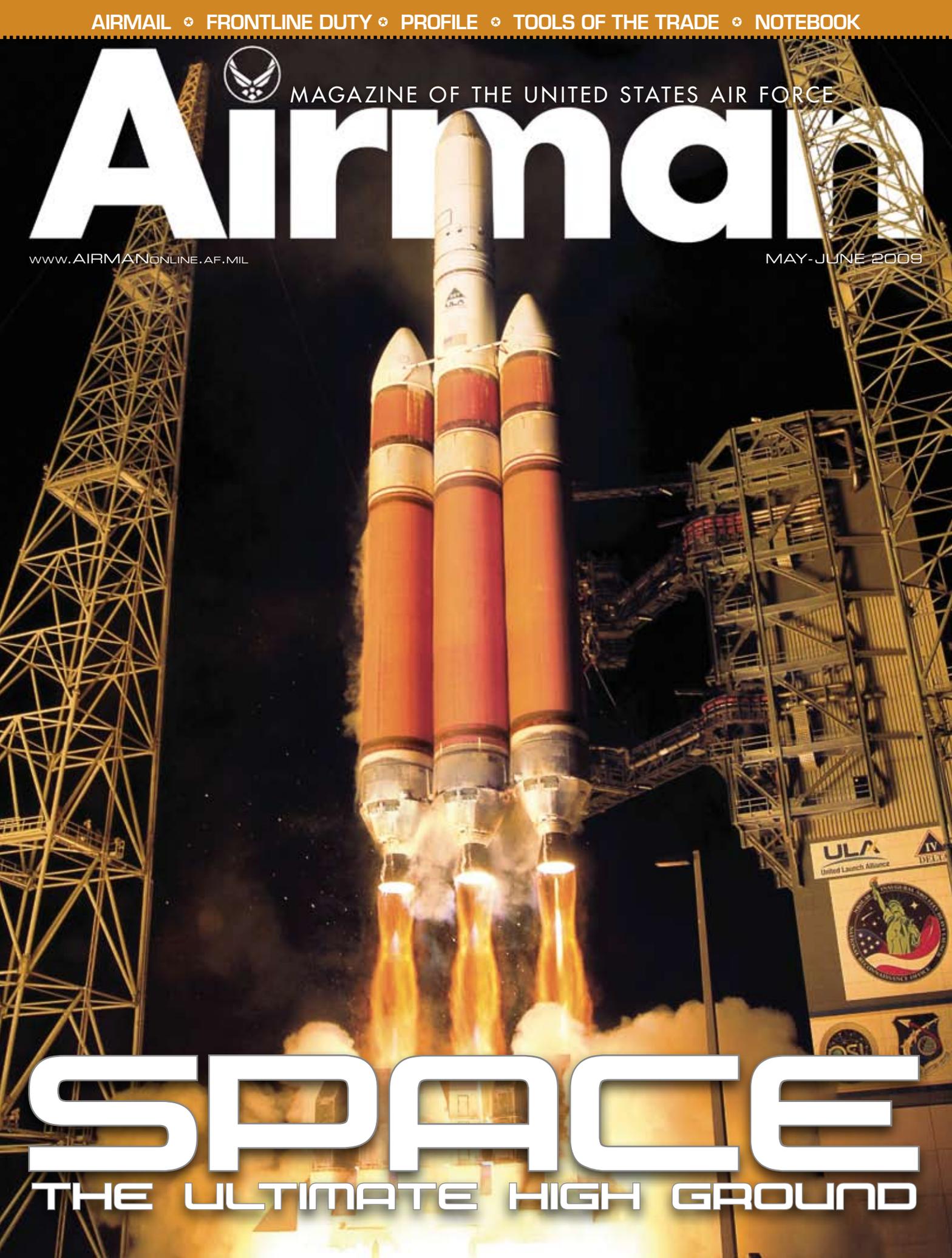


MAGAZINE OF THE UNITED STATES AIR FORCE

Airmail

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MAY-JUNE 2009



SPACE

THE ULTIMATE HIGH GROUND

MEMORIAL DAY

MAY 25, 2009





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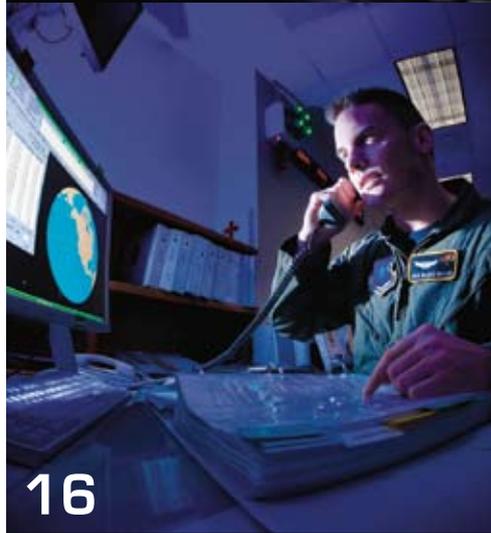
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On the Cover

A Delta IV Heavy Evolved Expendable Launch Vehicle lifts off at Cape Canaveral AFS.

photo courtesy
Pat Corkery
United Launch Alliance
design by G. Patrick Harris

COMMENTS

Got something to say about Airman? Write us at airman@dma.mil, or visit www.AIRMANonline.af.mil, to share views with fellow readers.



MISSING MISSILEERS

To say I am disappointed in the "Re-Invigorating the Nuclear Enterprise" [March-April 2009] article is an understatement to say the least.

During my missile combat crew training, I was taught the "old" strategic (nuclear) triad consisted of bombers, missiles, and submarines. While the Air Force has no control over the submarines, we control 2/3 of the triad. Yet your article seemed to cover only the air-breathing leg (i.e. the bombers).

For the record, missile crews do not receive any special duty pay (vs. flight pay), nor do they receive bonuses for their career field (vs. aviator incentive bonus).

They also have very few applicable skills to transfer to civilian life (vs. airline piloting skills). While aircrews can transfer airframes, as of 2005, there was only one model of ICBM available (LGM-30G Minuteman IIIs). The deterioration of the nuclear enterprise is a large scale problem that had symptoms showing from within the nuclear career fields themselves, if only someone noticed a few years back. It is no wonder that keeping morale high in the missile field is challenging.

To add insult to injury, our own Airman magazine ignored the missiles, and the people who support the ICBM mission.

I am no longer working in the missile field;



however, I am proud of the time I did in missiles and the people I worked with (officer, enlisted, operator, maintainer, security forces and support troops alike). Next time, please don't forget them.

Capt. Joseph T. Page, II

National Air & Space Intelligence Center

I appreciate the efforts to emphasize the importance of the Air Force nuclear enterprise and the article written on it [March-April 2009].

It does a nice job explaining the mission of 8th Air Force and big picture Air Force efforts; however, it leaves out 20th Air Force. The magazine also profiles an Airman from Barksdale Air Force Base, La. and the article on Global Strike command is centered on another photo of bombers. The magazine does not include any photos of missileers, missile maintainers or missile cops, nothing from 20th AF. I believe this piece is as important and shouldn't be ignored in the total nuclear enterprise.

1st Lt. Korry W. Leverett
341st Missile Wing

Editor's note: Our most recent issue of Airman [March-April 2009] covered a range of topics from "Re-invigorating the Nuclear Enterprise" to the Air Force's new UFC course to stand ups of the new Global Strike Command and Cyber NAF. With such a diverse and challenging set of stories to cover, we regret that we were unable to give the missileers the coverage they most certainly deserve. Time, budget and ongoing exercises and inspections were our obstacles this time around, but we will look for opportunities to include the 20th AF in the pages of Airman. Rest assured that this is not the last issue of Airman that will deal with the nuclear enterprise and that we plan to feature missile personnel more prominently in the future.

WASP NEST

I really enjoyed your article on the WASP Nest [March-April 2009]. It made me appreciate what Jackie Cochran, and her team did to support not only the war effort but also to prove that women can fly and meet the challenges just like their male counterparts. It's sad that these ladies were not given the rank, or benefits that they deserved years ago, but it's nice to know that the mistakes that were made were later corrected.

I was privileged to know a Women Airforce Service Pilot here in Washington State. Her name is Rose Sloan. She was a member of the Civil Air Patrol and rose to the rank of lieutenant



colonel in this program.

She was the commander of the Sandpoint NAS Composite Squadron. She wore her wings on her uniform, and I inquired what kind of wings these were, and she began to share her experiences with not only the adult members but the cadets as well. It's women like her who paved the way for our first and second female Thunderbird pilots, and women flying period. These ladies who flew for Jackie Cochran are a part of our history I'll always enjoy. I am proud to say that these ladies will always be a part of the U.S. Air Force and the Air Force history.

Tech. Sgt. Dean R. Martinez
92nd Force Support Squadron

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ISR : TOTAL FORCE



I enjoyed the article about ISR overcoming challenges [March/April 2009]. However, I was disappointed that the only senior officer you found to interview was an "IMA augmentee."

Col. Gerald Cox, retired
former Air Force intelligence officer

Editor's note: Interviews for this story were conducted based on requests to show the Total Force make up of the Intelligence Surveillance and Reconnaissance Agency. Active duty, Reserve and Guard Airmen were interviewed for a Total Force perspective; officer and enlisted interviews were conducted. The agency was pleased with the story. It is a good glimpse at the agency's history and where it stands today.

SUGGESTION

I would like to suggest an idea. I have seen a lot of advertisements for special duty jobs and maybe one or two small articles on MTIs and others. But what I would love to read are actual interviews with the people and their families in these special duty jobs answering the real questions. Questions, for example, like what are your hours like? How is this affecting your family? What hardships are you going through? Why did you choose this? What is your wife/family doing to cope with the rigorous schedule?

We'd like to see the real questions being asked because there is some stigma attached to these jobs. If the real questions aren't asked, the applicant will not have a clear picture of what they're getting themselves/their family into.

Senior Airman Christine Anderson
Ramstein Air Base, Germany

Editor's note: Thank you for taking the time to let us know what you think. *Airman* is written for people just like you. You have a great suggestion. We will look for ways to incorporate some of your ideas in future stories.

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Frontline Duty

AIRMEN EXECUTE DISTINCTIVE MISSIONS

America's Airmen perform diverse services everyday around the globe - From rescuing stranded boaters to welding million dollar aircraft.

"I believe I have the best job in the Air Force and I take a lot of pride in knowing I have a critical role in the B-1 maintenance world," said Senior Airman Nathan Schroeder, an aircraft metals technologist journeyman. "Nothing is ever the same, I have a chance to work with all kinds of exotic materials and develop new skills every day that I wouldn't get to do on the outside."

Airmen's thirst to develop new skills and continuous training to polish them are elements that keep the Air Force mission on track: to *fly, fight* and *win*...in air, space and cyberspace.

"There are some things you must do in life where the outcome is all that matters, and how you get there is not really important," Air Force Chief of Staff Gen. Norton Schwartz told Airmen deployed to U.S. Central Command's area of responsibility. "There are other things where how you accomplish something is equally, or even more important than the outcome. I will argue that we need that kind of discipline in everything we do. It applies to aircraft maintenance, cops, medical, logistics, readiness and any other mission you could name. It's the Air Force way. It's the right way. The key for our future is to do the right things the right way."

—Airman staff





FAST BURNER

photo by AIRMAN 1ST CLASS JOSHUA J. SEYBERT

Senior Airman Nathan Schroeder, aircraft metals technician journeyman, 28th Maintenance Squadron, welds a crack on a nose landing gear torsion link cover at Ellsworth Air Force Base, S.D. The cover protects hydraulic lines on the landing gear from damage.



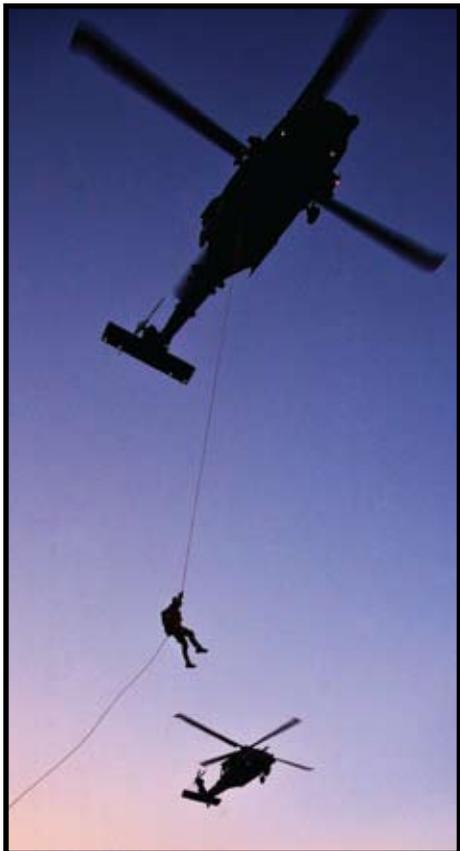
IN HARMONY Senior Airman Cristy Lagazo, a vocalist with Tops in Blue, performs at the Fremont Street Experience in Las Vegas, Nev. Tops in Blue is a U.S. Air Force special unit made up of talented amateur performers selected for their entertainment abilities who perform for military personnel and their families all over the world. Tops In Blue celebrates 55 years of entertainment history in 2009.

RESCUE ANGELS U.S. Air Force Pararescuemen and Japanese Air Self Defense Force Air Rescue personnel help a simulated survivor to a collection point on a beach off the coast of Okinawa, Japan during exercise Cope Angel. This annual bilateral event strengthened cooperation between Kadena Airmen and their Japanese counterparts, challenging them with a variety of realistic scenarios.



WARRIOR FLIGHT U.S. Airmen from the 820th Security Forces Group and personnel from the II Squadron Royal Air Force Regiment, from RAF Honington, board a C-17 Globemaster III aircraft to perform a static line parachute jump over Moody Air Force Base, Ga. The RAF unit visited the 820th Security Forces Group for a training exercise called Operation Winged Eagle.





FLYING BY WIRE Air Force Reserve Pararescuemen conduct 100 ft. repel training from a HH-60G Pave Hawk during a training mission in preparation for space shuttle mission STS-119 at Patrick Air Force Base, Fla. Among their many missions, the 920th Rescue Wing provides primary rescue support for astronauts during all shuttle launches.



ORDNANCE CHECK At Andersen Air Force Base, Guam, Capt. Patrick Applegate inspects the M-117 ordnance on his B-52 Stratofortress before a live-drop mission for exercise Tropic Fury. The B-52 is deployed from Minot, N.D. in support of Operation Iraqi Freedom.



⊞ **THUNDER ROAD** The U.S. Air Force Air Demonstration Squadron
photo BY SENIOR AIRMAN LARRY E. REID JR. | “Thunderbirds” fly over the Las Vegas Motor Speedway during the Shelby 427 NASCAR Sprint Cup race. Stationed at Nellis Air Force Base, Nev., the Thunderbirds began their 2009 air demonstration schedule March 21 and will perform 73 shows in the United States, Puerto Rico and the Far East.

⊞ **PATRIOT POST** Master Sgt. Robbie Bean and Senior Airman John Ostrowske rappel with the American flag during the opening ceremony of an Arenacross 2009 series dirt bike race event in Dayton, Ohio. Both Airmen are from Wright-Patterson Air Force Base, Ohio.

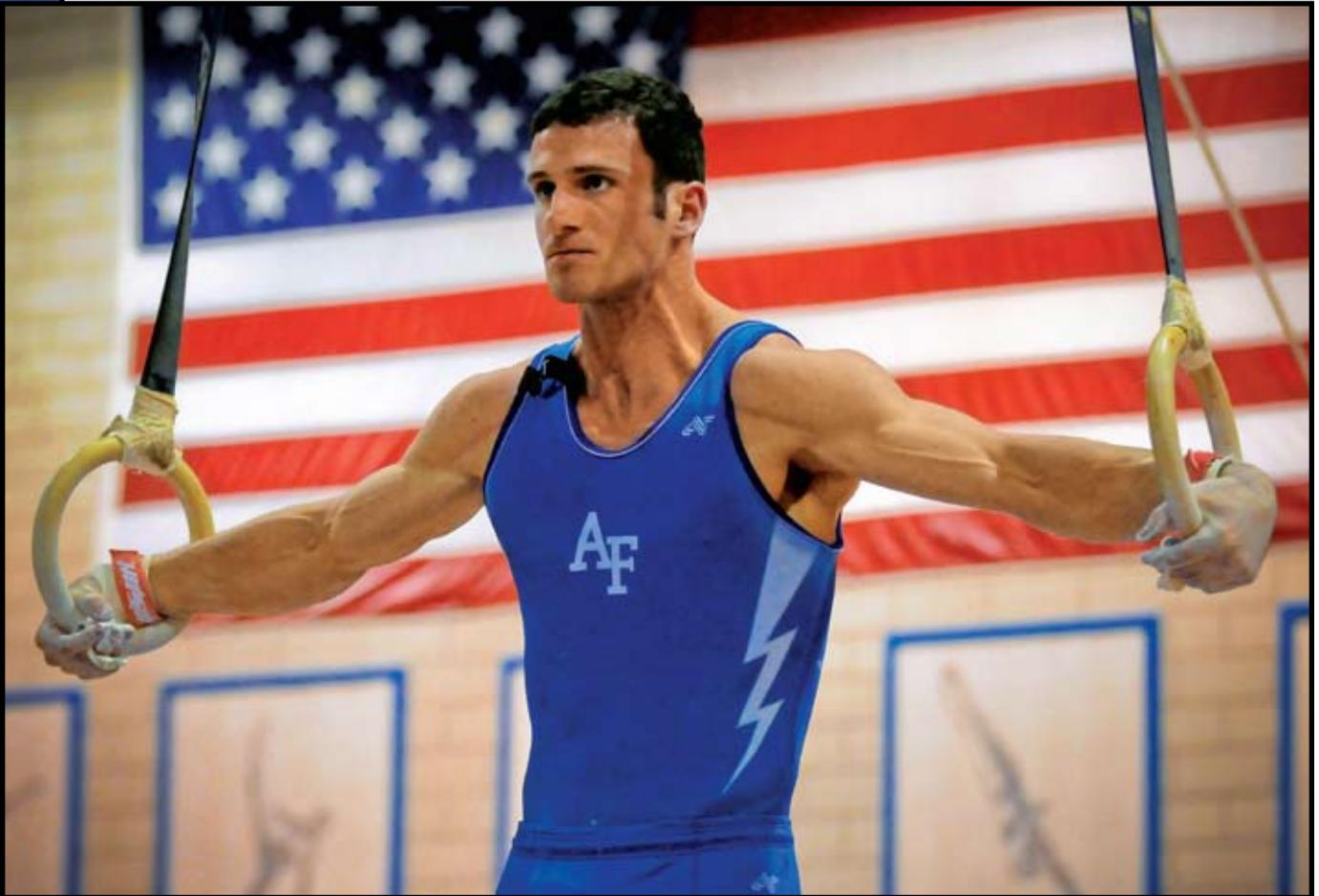




STRONG WILLED

photo by MIKE KAPLAN

Air Force Academy Junior Garrett Canter executes an iron cross on the still rings at the annual Rocky Mountain Open held this year at the U.S. Air Force Academy in Colorado.



HOMECOMING

photo by SENIOR AIRMAN MARC I. LANE

Tech. Sgt. Joe Jackson, a munitions controller with the 28th

Munitions Squadron, hugs his son at Ellsworth Air Force Base, S.D., in January when approximately 300 Airmen returned to the base from deployments supporting Operations Iraqi Freedom and Enduring Freedom.



SPACE POWER

ENLISTED SATELLITE OPERATORS KEEP COMMUNICATION CHANNELS OPEN

STORY BY STAFF SGT. MATTHEW BATES ✦ PHOTOS BY LANCE CHEUNG ✦ DESIGN BY LUKE BORLAND



Airman 1st Class Jasper Platt keeps up on his proficiency training in a space ground link space training cell at the 4th Space Operations Squadron at Schriever Air Force Base, Colo., Feb. 25, 2009. At 23 years old, Airman Platt is one of the unit's task evaluators.



Inside a ground mobile unit, Airman 1st Class Cameron Cruz, a space ground link system operator, responds to an inquiry about the health and status of an orbiting MilStar satellite located more than 22,000 nautical miles above the earth in a geosynchronous orbit. To maintain command and control of the MilStar constellation, mobile units that look like conventional tractor-trailer trucks, can relocate anywhere in the world. As a part of these teams, he must be a top operator and maintain additional proficiencies such as combat convoy procedures, and be licensed as a commercial truck driver.

Airman 1st Class Cameron Cruz is a space man. Yet, he's not from another world; he doesn't wear a space suit, and he definitely doesn't fly around in a spaceship. In fact, he's never even been to space.

"I'm no astronaut," he chuckles.

But while Airman Cruz may not perform space walks or fly on dangerous missions to repair broken-down space stations, his contributions to the Air Force's ongoing endeavors in space are no less important.

He's an extremely high frequency satellite operator with the 4th Space Operations Squadron at Schriever Air Force Base, Colo., and on a daily basis he works with one of the most important communications satellite systems in the Air Force's space armada – the Milstar constellation.

Made up of five satellites, the Milstar constellation flies in geosynchronous orbit and provides secure, reliable and robust communications capabilities to U.S. forces around the globe. Orbiting at more than 22,000 miles above earth, this man-made constellation – which has surpassed 40 years of combined successful operations – provides a protected, global communication network for the joint forces of the U.S. military and can transmit voice, data and imagery. Being nuclear hardened and anti-jammable, the constellation also provides the president, the secretary of defense and combatant commanders positive command and control of the nation's strategic forces.

It's Airman Cruz's job to ensure this communication is possible.

"My primary mission is to make sure we provide warfighters with secure, reliable communications capabilities," he said.

He's not alone, either. All around him, on the squadron's

operations floor, are other Airmen who are tasked with the same mission, "making sure these satellites do what they're supposed to do, when needed."

"We monitor the health and life of the Milstar system and its ground-based antenna," said Airman Ashley Risk, a satellite operator. "We make sure the satellite is where it's supposed to be and all of its parts are working correctly."

It's a job that is both daunting and essential.

"If this system goes down or we lose our link, then this will affect the warfighters who are using the system," said Airman 1st Class Jasper Platt, a satellite operator with 4th SOPS. "This affects their ability to communicate and operate effectively. If a link is broken, we fix it."

These Airmen work with billions of dollars of high-tech equipment every day – equipment that is of strategic importance to the nation. And the Airmen themselves are young in both age – averaging just over 20 years old – and experience, with most of the operators being junior in grade and just out of technical school.

What they lack in experience, these Airmen make up for in expertise.

"To think that we have young Airmen out there who are operating these satellites points to the quality of both the young people entering the Air Force and the training they receive once they get here," said Col. Jay Moody, deputy director of requirements, Headquarters, Air Force Space Command. "Some of these Airmen are just out of high school, and now they're operating equipment worth many millions, and in some cases billions, of dollars that provide capabilities essential to our efforts in Iraq and Afghanistan."

Young Airmen with big responsibilities – Airman Cameron Cruz (left) is a space operator who works on the legacy Milstar satellite system. Airman Ashley Risk and Airman 1st Class Jasper Platt are space operators who are part of the team building the emerging system. All are assigned to the 4th Space Operations Squadron at Schriever Air Force Base, Colo.





Airman Ashley Risk, space ground link system operator with the 4th Space Operations Squadron at Schriever Air Force Base, Colo. She monitors the health and status of Milstar satellites which provides a protected, global communication network for the joint forces of the U.S. military. When needed; she is able to send commands to the satellites to maintain proper operation.

The cost of these satellites matters little to these operators. They don't think too much about their ages or experience levels, either. They are more concerned with doing their jobs and having an impact on the nation's military and civilian communications capabilities.

And, this impact can be felt throughout the Air Force.

"The impact of the enlisted space system operators is unbelievable," said Chief Master Sgt. Richard Small, AFSPC command chief. "We have young enlisted Airmen who are sitting at consoles 24-hours-a-day, 365-days-a-year to make sure our space systems are doing exactly what they are designed to do."

These enlisted satellite operators are also directly contributing to the nation's efforts in Iraq and Afghanistan, the chief said.

"These Airmen are literally on the picket lines for the country," he said. "They aren't only helping win our current wars; they also work every day to prevent attacks against our nation through the systems deterrent capabilities."

For many, this amount of responsibility would seem overwhelming. And, even though they are geographically separated from the war, knowing every button push can possibly impact operations over there only adds to the pressure.

"This job is somewhat intimidating if you think about it," Airman Cruz said. "But I don't really think about that. I think more about the good we're doing ... the lives we're saving and the people we're helping just by making sure these satellites operate the way they're supposed to."

This sentiment is shared by Airman Cruz's peers.

"The things we do from inside this room affect what happens continents away," Airman Risk said, "it's a good feeling, knowing that."

But, as is often the case, those working behind the scenes, like

these satellite operators, are easily overlooked.

"There are Airmen operating communication satellites, global positioning satellites and even defense satellites every day," Colonel Moody said. "The work they do is often taken for granted. We need to remember that the reason people can use GPS or use their radios is because these Airmen are somewhere else, making sure it's possible."

Still, these operators don't mind a certain sense of anonymity.

"It feels great to work behind the scenes," Airman Platt said. "We don't do this job for the notoriety; we do it because it's what we love, and we know we're making a difference."

From monitoring space shuttle launches and guiding precision bombs, to helping experts predict the weather and allowing people to hear commercial-free radio, satellites offer a wide range of capabilities and services that are vital to both military leaders and civilian consumers.

Operating one of these satellites and one of the nation's most expensive and vital communications systems, is what Airman Cruz does on a daily basis.

So, while he doesn't own a space suit or has never broken through the earth's atmosphere in the belly of a rocket ship, this doesn't mean he isn't a space man. 🦋

SPACE POWER

ENLISTED SATELLITE OPERATOR

Airman First Class Cameron Cruz

photo by Lance Cheung



“It’s an honor to serve my country as a Satellite System Operator. There’s a tremendous amount of responsibility that comes with being trusted with a space system worth \$31 billion. More importantly, providing secure communication to warfighters is critical in many different aspects. Knowing that what I do can possibly save lives and help complete a military mission gives me both a sense of accomplishment and pride. Training for me never stops. If I’m not proficient at my job, then I let down those who depend on me. This one thing I will not let happen.”

HOME UNIT/BASE:

4th Space Operations Squadron
Schriever Air Force Base, Colo.

HOMETOWN:

Warner Robins, Ga.

ENTERED AIR FORCE:

Jan. 16, 2007



FIRST AID
WOOL
BLANKET

SPACE SENTINELS

PROFESSIONALS RUN RADAR SITES PROTECTING NORTH AMERICA FROM MISSILE ATTACK

STORY BY STAFF SGT. MATTHEW BATES ✦ PHOTOS BY LANCE CHEUNG
DESIGN BY G. PATRICK HARRIS

In the 1983 movie, "War Games," a computer whiz-kid inadvertently set in motion a global thermonuclear war scenario when he hacked into a Department of Defense supercomputer.

To the computer, this "war" was nothing more than a game, and firing a nuclear missile at the Soviet Union was the same as moving a pawn across a chessboard.

In real life, though, the thought of nuclear missiles being fired at the U.S. is anything but entertaining – and it's one the Air Force takes very seriously.

The service hasn't entrusted its missile warning and defense capabilities to the whims of a supercomputer – it enlists the help of several radar sites scattered across the globe and numerous satellites orbiting high above the Earth to protect the nation from just such an attack. While the Cold War may be over, the threat of a missile attack is no less serious today than it was 30 years ago. Because of this, these radars and satellites, and the Airmen who run them, work around the clock as the nation's front lines for missile warning and defense.

"We're here to protect America," said 1st Lt. Bryony Veater, deputy chief of the Operations Support Flight, 7th Space Warning Squadron, Beale Air Force Base, Calif., "24/7, 365 days a year."





Brandon French ensures all network systems are working properly in the operations center of the 7th Space Warning Squadron at Beale Air Force Base, Calif. The squadron provides critical, real-time missile warning, missile defense, attack assessment, and space situational awareness. Mr. French is the Upgraded Early Warning Radar System administrator.

PAVE PAWS FOR PEACE

The heart of the nation's missile warning capabilities, the Pave Phased Array Warning System, or Pave PAWS, has been monitoring the skies surrounding North America since the early 1980s. The system's main purpose is to detect and track both intercontinental and sea-launched ballistic missiles.

It's a job it does well.

"If something's out there, we'll see it," said Lt. Col. Corey Keppler, 7th SWS commander. "And that's really what our job is, to detect launches, track them and provide data to the right agencies."



Senior Airman Blake Braun responds to a phone call from the Joint Space Operations Center at Vandenberg Air Force Base, Calif. Airman Braun, a space systems operator with the 7th Space Warning Squadron, operates a space console at Beale Air Force Base, Calif., to identify, track and categorize space objects.



Eddie Clark, the computer lead technician, checks the status of processors in the operations center of the 7th Space Warning Squadron, Beale Air Force Base, Calif. The processing units track objects in space as small as a wrench 3,000 miles away by reading data signals collected by 10-story tall antenna.

Beale Air Force Base is one of several Pave PAWS sites that are scattered around the globe. Others are at Clear Air Force Station, Alaska; Cape Cod AFS, Mass.; Cavalier AFS, N.D.; Thule Air Base, Greenland; and Royal Air Force Flyingdales, England.

Together, these stations create the ground-based radar network – a crisscrossed pattern of coverage that monitors the areas surrounding North America and the United Kingdom.

Each radar station can "see" 3,000 miles across the Earth's hemisphere and up to 12,000 miles above the Earth. The radar faces are giant, 10-story structures containing thousands of arrays and sensors that are continuously sending and receiving data.

This data is fed into a room full of computers, where it is deciphered and relayed to the radar's command center as easily readable information.

The radars are designed to search their areas of responsibility for missiles or launch plumes, but, calibrated the right way, they can track items much smaller.

"We help track space shuttle launches," Colonel Keppler said. "And the radars are sensitive enough to see something as small as a piece of foam falling off the shuttle during its launch."

Each radar station is also self-sustaining. They have their own power plants, communications systems and security personnel and are nuclear hardened, meaning the radars are designed to survive and maintain operations after a nuclear blast.

"If something like that happened, we would be the eyes and ears of our defense capabilities," Colonel Keppler said.

The Pave PAWS sites were built during the heart of the Cold War, a time when nuclear attack was a thought that weighed heavy on many minds. Even though the Cold War is over, these radars are very important, said officials at Air Force Space Command.

"There are still real threats out there," said Col. Jay Moody, deputy director of Requirements for Headquarters AFSPC at Peterson Air Force Base, Colo. "China has launched missiles at a satellite, and other countries are trying to get their feet into the nuclear arena. It's important we have the capability to know when and where someone tries to attack us."

Which, by design, is exactly what Pave PAWS will do.

ALL SEEING EYES IN THE SKY

Pave PAWS aren't the only sentinels on duty for missile warning and defense. A network of satellites orbit the earth and monitor its atmosphere with unblinking eyes.

These silent sentinels are the AFSPC-operated Defense Support Program satellites -- a key part of North America's early warning systems. In their 22,300-mile, geosynchronous orbits, DSP satellites help protect the United States and its allies by detecting missile launches, space launches and nuclear detonations.

"They are really the workhorses for missile warning," said Lt. Col. Michele Edmondson, commander of the 2nd Space Warning Squadron at Buckley Air Force Base, Colo. "They provide reliable early warning capabilities to our nation and its defense."

The first DSP satellite launched in the early 1970s. Since then, this system has provided uninterrupted space-based missile warning capabilities.

The satellites use an infrared sensor to detect heat from missile and booster plumes against the earth's background. Over the years, though, the technology used by the satellites has undergone several upgrades to keep them current with modern threats.

"Missiles used to be large, easily identifiable objects," Colonel Edmondson said. "But now, they keep getting smaller and smaller and harder to identify."

In 1995, technological advancements were made to the ground processing systems, enhancing the satellite's detection capability of smaller missiles and providing improved warning of attack by short-range missiles against the United States.

A new satellite system, the Space Based Infrared System, or SBIRS, is also set to be online soon.

“SBIRS will work alongside and eventually replace DSP,” Colonel Moody said. “This system will provide the nation with critical missile defense and warning capabilities well into the 21st century.”

SBIRS features a mix of geosynchronous earth orbit satellites, highly elliptical earth orbit payloads and associated ground hardware and software.

The system will have both improved sensor flexibility and sensitivity, will cover short-wave infrared, and will have expanded mid-wave infrared and see-to-the-ground bands, allowing it to perform a broader set of missions compared to its predecessor, the DSP.

The program is currently in the engineering, manufacturing and development phase, with the first GEO satellite expected to launch in 2010.

THE HUMAN ELEMENT

As effective and consistent as the U.S.’s missile warning and defense satellites and radars are, none of them would work without the Airmen who monitor them on a daily basis.

“It’s truly the Airmen who make the whole system work,” Colonel Moody said. “It’s their dedication and professionalism that ensures these satellites and radars do what they’re supposed to, when they’re supposed to.”

Their human eyes are also needed to aid the electronic ones they are in charge of.

“The satellites and radars only pick up and warn us of items in the earth’s atmosphere, so the Airmen are the ones who look at it and

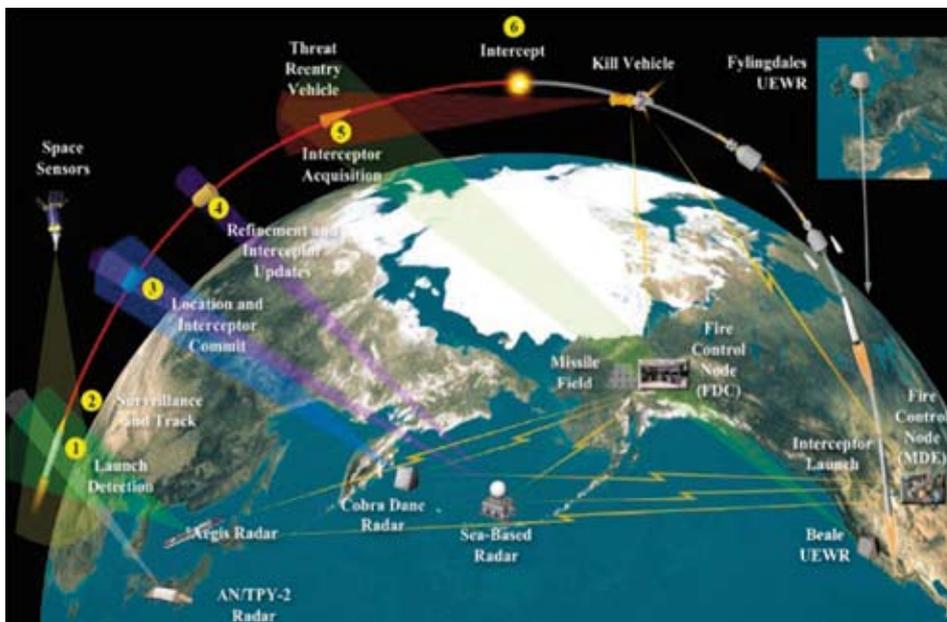


Working inside a 10-story **Pave Phased Array Warning System, or Pave PAWS**, the men and women of the 7th Space Warning Squadron continuously scan the horizon for missiles, satellites and other man-made objects in space.

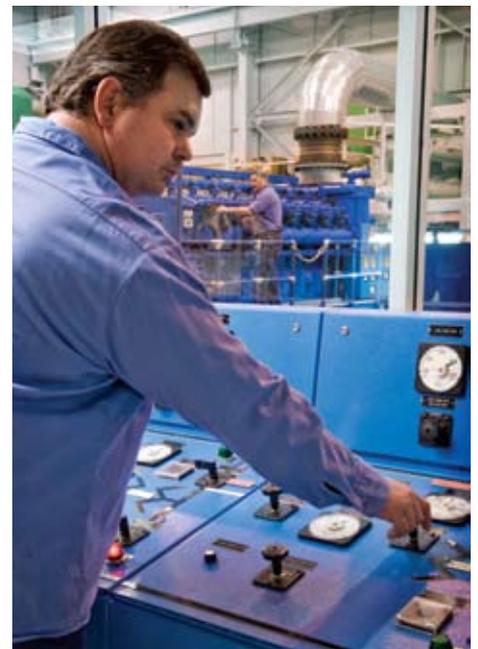
say, ‘Okay, that’s nothing to worry about,’ or ‘Hey, let’s take a look at that,’” Colonel Edmondson said.

For the Airmen who work with the satellites and radars, it’s a job they take seriously and are proud to do.

“When I sit back and think about the fact that I’m contributing to the defense of the country, that makes me feel proud,” Lieutenant Veater said. “Sure, it’s easy to say all I do is push buttons or talk on the phone, but everything we do helps keep the nation safe. That’s a good feeling.” 🦅



MISSILE WARNING/MISSILE DEFENSE



Mike Dalton tests the transfer of electrical power from the commercial grid to the on-site power plant at the 7th Space Warning Squadron at Beale Air Force Base, Calif. Mr. Dalton is a contract power plant operator.

Re-fitting the **space**



armmada

AIR FORCE SEEKS TO IMPROVE ITS AGING SATELLITE FLEET

STORY BY STAFF SGT. MATTHEW BATES ✦ DESIGN BY VIRGINIA REYES



Master Sgt. Eric Gemmill adjusts the support system of a Transportable Antenna System while Capt. Joseph Fixemer directs the leveling of the system. The antenna is a component of the Rapid Attack Identification Detection Reporting System, or RAIDRS, at Peterson Air Force Base, Colo. RAIDRS is the new defensive counterspace weapon system for 2010.



Travis Air Force Base, Calif., aircrews and Boeing employees offload a Wideband Global SATCOM spacecraft container from a C-5 Galaxy at the Kennedy Space Shuttle Landing Facility at Cape Canaveral Air Force Station, Fla. Aircrew of the 22nd Airlift Squadron first departed Travis and met with Boeing employees in Southern California, where the container was uploaded, then flown to Kennedy Space Center. The equipment was offloaded immediately by a pre-positioned offload team.

When Galileo stared deep into the sky through his telescope centuries ago, he must have been amazed by the thousands of stars he saw glittering in the eyepiece. He must have been thrilled at the prospects space offered as he spent days upon days cataloguing stars and their constellations.

If he were to look through that same telescope today, he would see a host of new stars and constellations – ones that twinkle with a different light and move unnaturally, steered by machinery and software.

These “stars” are part of the Air Force’s newest fleet, its space armada of satellites. And they’re not just for looking at through a telescope; they provide a wide range of communication, navigation and defense capabilities to the U.S. military and various other agencies.

The Air Force uses these satellites to guide bombs on target, provide real-time reconnaissance, help defend the U.S. from missile attack and give special operations teams the ability to talk to combatant commanders who may be separated by thousands of miles.

In essence, the capabilities satellite technology brings to the table are re-shaping how wars are fought.

“Space power has helped shape the American approach to warfare; it gives our warfighters a decisive advantage,” said Gen. C. Robert Kehler, commander of Air Force Space Command at Peterson Air Force Base, Colo. “Without space, military operations would be far less precise, focused, timely, coordinated and efficient, and far more costly.”

Capabilities aside, unlike their celestial counterparts, satellites

do not have long lives. Changes in threats and the needs of joint warfighters drive home that the Air Force’s aging satellite fleet needs updating. This means AFSPC must not only deploy and operate its satellites, but also find ways to improve them.

“The Air Force has made, and is making, strides to develop new systems and extend the life of existing systems, but there is still a need for new ways of developing and deploying space capabilities,” General Kehler said.

One way AFSPC is doing this is by improving the technology of satellites launched into orbit above the earth. One example is the new Wideband Global SATCOM, or WGS, satellite, a military communications satellite that was first launched into geosynchronous orbit in 2007.

Before the launch of the WGS, the Air Force operated nine Defense Satellite Communications Systems Phase III satellites to provide secure voice and high-rate data capabilities to military agencies across the globe.

“The DSCS satellite is really a great workhorse,” said Col. Jay Moody, deputy director of requirements for Headquarters AFSPC. However, the newer WGS satellite is already proving its worth and outpacing its older peer.

“One WGS satellite has more capacity than all of the DSCS satellites in orbit right now,” Colonel Moody said. “This is a tremendous improvement in capability, not only for the Air Force, but for the joint warfighter.”

The WGS not only provides more bandwidth; it does so at a lower cost. Each of the nine DSCS costs an estimated \$200 million, while the one WGS currently in orbit costs an estimated \$300 million.

Communications satellites aren't the only constellations receiving upgrades. The entire Global Positioning System is also seeing some changes.

Last month, the Air Force successfully launched the GPS Block II R-M satellite, which provides improved GPS capabilities. Each of these satellites is equipped with a modernized antenna panel that gives it boosted signal power for receivers on the ground, two new military signals for improved accuracy, enhanced encryption and anti-jamming capabilities and a second civil signal that gives users an open access signal on a different frequency.

"So these satellites don't only improve our military capabilities, but they provide enhanced capabilities to civilian users, too," Colonel Moody said.

The missile defense satellite network is also being modernized to deal with newer threats. AFSPC-operated Defense Support Program satellites are a key part of North America's early warning systems. In their 22,300-mile, geosynchronous orbits, DSP satellites help protect the United States and its allies by detecting missile launches, space launches and nuclear detonations. Yet, their technology is aging, having been around since the early 1970s, and missiles are smaller now, making them harder for DSP to see.

"DSP has done its job tremendously over the past 35 years," Colonel Moody said. "But we needed a new system that is able to detect new threats, which are smaller and don't show up as easily on the current system."

The answer is SBIRS, the Space Based Infrared System, which is scheduled to come online in 2010.

SBIRS will not only provide improved missile warning and missile defense capabilities, but the system will also support the technical intelligence and battle-space awareness mission areas.

"This is one of Space Command's highest priority space systems," said Lt. Col. Michele Edmondson, commander of the 2nd Space Warning Squadron at Buckley Air Force Base, Colo. "And it's really an effective system."

Whether its upgrading GPS, providing greater communications capabilities or enhancing the nation's ability to detect and warn of missile attacks, the Air Force is hard at work, making sure its satellite systems are not only functioning, but are doing so with the latest technology.

Improvements are costly, but officials at Air Force Space Command say the capabilities space brings to the fight more than pay for themselves.

"We are doing our best to support the joint warfighting community by offering all the capabilities space has to offer," Colonel Moody said. "Space systems are not just enablers; they are actually force multipliers."

The capabilities these space systems bring are not going unnoticed, or unused. From combatant commanders to troops on the ground, space resources are being used on a daily basis in places like Iraq and Afghanistan.

"The recognition of what space brings to the Air Force is becoming much more apparent across the board," Colonel Moody said. "People in every service are also starting to recognize what space can bring to the fight."

In fact, space systems provide so many capabilities, they are often taken for granted. In 2002, Lt. Gen. Joseph M. Cosumano, then commander of the U.S. Army's Space and Missile Defense Command, wrote an article titled, "A Day without Space" in which he detailed how reliant the U.S. military is on satellite technology and how important it is to military operations.

"From a military perspective, a day without space would mean we have no effective long-haul communications, thus precluding direct command and control with our joint and coalition partners and ensuring a limited reach-back capability," the general wrote. "Effective space control leads to space superiority, which, like air and

information superiority, is critical to our success as a military force."

For this reason, it is important to both continue to provide the best space capabilities possible and protect these assets.

Would-be adversaries know how the U.S. uses space in its warfighting capabilities, General Kehler said, and understand how challenging the Air Force on that front can provide a way to contend with American airpower.

"Space used to be an uncontested domain," Colonel Moody said. "But, as recent events show us, this is not the case anymore."

The colonel cited jamming attempts of American GPS by foreign governments, and the use of an anti-satellite weapon by the Chinese two years ago as examples of developing threats for which the U.S. must be prepared.

"We're constantly looking at ways to make our satellites more survivable," he said, "like making them less susceptible to jamming or resisting things that may attempt to keep them from working effectively."

The Air Force has come far in the space arena, but the service is constantly looking at ways to improve or replace its existing space armada.

"We are an air and space force," Colonel Moody said. "Our goal is to have air and space superiority, which we do."

Staring through his ancient telescope, Galileo may have been wrong about his theories of planetary orbit, but one thing he did get right: The prospects space offers are thrilling.

And, because of the efforts of people at Air Force Space Command, these prospects are being explored and made a reality – one twinkling, man-made "star" at a time. ✨

photo by Lance Cheung



Martin Leahy performs voltage and continuity tests on a tactical satellite, known as Tactical Satellite-3, at the Space Vehicle Directorate at the Air Force Research Laboratory, Kirtland Air Force Base, N.M. The satellite is scheduled to be launched in October. Mr. Leahy is a field engineer with ATA Aerospace.



AIR FORCE SPACE COMMAND

CONSTANTLY EVOLVING TO MEET
AND OVERCOME CHALLENGES

STORY BY TECH. SGT. MATTHEW MCGOVERN ✦ DESIGN BY MIKE CARABAJAL



Air Force Space Command constantly strives to improve the “edge” American combat troops have on the battlefield. Today, embroiled in the race for technology and with a spirit of ingenuity, the men and women of AFSPC grant these forces many advantages unavailable to the enemy.

Since taking the reins in October 2007, Gen. C. Robert Kehler, commander of AFSPC, saw a need to improve that edge.

With recent additions to the space stable, the general and his team of more than 39,000 space professionals, capitalized on emerging technologies, widening the gap between American troops and enemy combatants.

Chief among the evolved technologies is a field of twinkling satellites in the night sky including more than 30 Global Positioning System satellites working simultaneously to assist the joint and coalition team in many ways, including navigation, rescue operations, and bomb and missile guidance.

“We have witnessed a shift in understanding over the last decade,” said General Kehler. “Today, the joint warfighter has a far greater appreciation for the decisive, precise combat effects satellite constellations, such as the Global Positioning System, bring to the battlefield.”

In addition to the GPS satellites, the first Wideband Global SATCOM satellite, the most powerful communications satellites in the Department of Defense, became operational in April 2008. Now with two of six satellites in orbit and operating, Air Force Space Command’s WGS satellites each provide more capacity than the entire legacy constellation. The Defense Satellite Communications System, with WGS is projected to eventually replace DSCS.

“WGS will provide essential communication services for combatant commanders to command and control their tactical forces,” said General Kehler. “It will provide a quantum leap in communications bandwidth to Soldiers, Sailors, Airmen and Marines.

“In the same vein, the Advanced Extremely High Frequency satellite system will provide more survivable, jam-resistant, worldwide, secure communications with a 10-fold increase in



At Detachment 3, four “golf ball” protective covers that house satellite dishes are viewed during the darkness Jan. 25 at Thule Air Base, Greenland. Thule AB Airmen with two major space missions support the Air Force Space Command mission.

capacity and more than five times the data rate of Milstar,” the general said.

Satellites provide advantages for the joint warfighter; however, nuclear deterrence remains a high priority of the Air Force and the ultimate backstop of our nation’s security. It dissuades opponents while assuring allies.



Electronic warfare officers monitor a simulated test in the Central Control Facility at Eglin Air Force Base, Fla., April 16. They use the CCF to oversee electronic warfare mission data flight testing. Portions of their missions may expand under the new AFCYBER commander. Pictured are Lt. Col. Tim Sands, 53th Electronic Warfare Group AFCYBER Transition Team Chief, Capt. Jon Smith, 36th Electronic Warfare Squadron Suppression of Enemy Air Defenses test director, and Lt. Col. John Arnold, 36th Electronic Warfare Squadron commander

Our nation's security relies heavily on the enduring attributes of the intercontinental ballistic missile force and the dedication and professionalism of those who secure, maintain and operate it.

— Gen. C. Robert Kehler

“Our nation's security relies heavily on the enduring attributes of the intercontinental ballistic missile force and the dedication and professionalism of those who secure, maintain and operate it,” he said.

Recent changes to revitalize the Air Force's nuclear enterprise are underway and have become General Kehler's primary focal point.

“Our first priority is re-invigorating the nuclear enterprise. As we prepare to transition the ICBM mission to Air Force Global Strike Command, we will maintain our standard of perfection in mission performance and focus on taking care of our people,” said General Kehler. “Our people and their expertise are critical to our success. They are incredibly dedicated professionals that will drive this new command to great success.”

Another great concern on the general's mind these days is improving protection of U.S. space systems and increasing situational awareness in space.

“We now operate in a contested space domain with increased threats to our space capabilities including radio frequency jamming, laser blinding, and anti-satellite systems,” he said.

At his direction, General Kehler has a team of experts working to prevent these threats. Last year, he led the establishment of the space protection program along with the National Reconnaissance Office, which will provide decision makers with a range of informed options and recommendations demonstrating the best means to protect America's space systems and stay ahead of the threats.

“We have already taken steps to improve space protection, including strengthening our cyber and physical security. Many of our on-orbit systems were designed and built to operate in a nuclear environment,” said General Kehler.

In addition, the general considers the safety and protection of cyberspace to be at the top of his list.

“Make no mistake about it; the fight is on in cyberspace,” he said. “When we come to work and log in, we are entering a war zone where everyone must be a defender. Our cyber space capabilities are too important and too tempting a military target for the Air Force to ever take it for granted. It's not about whether we'll be attacked, it's about whether we'll be prepared for the attack.”

The general noted that cyberspace is the most prevalent of the domains in which the U.S. military currently operates and said securing it is critical to all joint activities.

To lead the charge in the cyber arena, a new numbered Air Force, the 24th Air Force, is being organized under Air Force Space Command. The 24th Air Force will be made up

Courtesy photo



The 45th Space Wing from Patrick Air Force Base, Fla. supports a Delta II launch at Cape Canaveral Air Force Station. The Delta II, designed to launch global positioning system satellites into orbit, has been a workhorse in the world of spacelift with more than 130 successful launches.

of cyberspace warriors supporting a more combat capable and highly effective force providing security to joint and coalition partners around the globe.

“As we stand-up the 24th Air Force, our overarching objectives in cyberspace will include assuring freedom of action for friendly operations, denying adversaries' freedom of action when needed, and creating effects in, through and from the domain,” he said. “Since these domains are increasingly interdependent, loss of control in any one domain could lead to loss of control in all the domains.”

In addition to fighting the enemy through space and in cyberspace, the Airmen of Air Force Space Command are also doing their part on the ground.

“Our Airmen actively support expeditionary operations with members deployed downrange and supporting from bases here in the United States. AFSPC professionals are in this fight, 24-hours-a-day, every day,” said General Kehler. 🦅



ABOVE THE CLOUDS

AIRMEN PROVIDE SPACE SUPPORT TO BENEFIT WARFIGHTERS, PUBLIC

STORY BY MASTER SGT. BEN GONZALES ✪ PHOTOS BY STAFF SGT. BENNIE J. DAVIS III ✪ DESIGN BY LUKE BORLAND

Take a brand new aircraft right off the assembly line and then prepare it for its first mission. There is no maiden test flight or trip around the flagpole to evaluate its performance. It must launch without a hitch and run perfectly for up to 15 years without a glitch. And by the way, after it is launched then there is no possibility of bringing it in for any kind of maintenance. It has to be flawless because perfection is expected and relied on by millions.

When it comes to the space mission, there is no second chance. Air Force Space Command officials must be perfect every time for each mission or there could be loss of life and millions of dollars.

Making sure missions are flawlessly prepared are members of the 45th Space Wing at Patrick Air Force Base, Fla. They process and launch U.S. government and commercial satellites from nearby Cape Canaveral Air Force Station, Fla.

The mission starts well before a vehicle is launched. The Air Force works with the Department of Defense to determine what the warfighter needs to have an advantage in combat. It could be an advanced weather satellite to better track storms or conditions over an area. It could be a communications satellite giving American servicemembers more secure and instantaneous links. Or it could be an intelligence satellite that will let military leaders

make well-informed decisions for troops on the ground.

Once a new satellite is built by contractors and ready to be taken into space, members of the 45th SW use Delta and Atlas rockets to get them into orbit. Above the Earth, these satellites provide everything a warfighter needs to have the advantage on the battlefield.

“When the troops need information — whether it is communication, intelligence or weather — it is available to them at any time, anywhere,” said Capt. Eric Bogue, a Delta IV lead mission integrator for Geostationary Operational Environmental Satellite launches.

“We put the Delta IV together in the Horizontal Integration Facility where we receive incoming equipment that must go through various tasks and check outs to ensure everything is ready for launch,” said Captain Bogue. “This is where we take care of everything before we move it to the launch pad. It is a long, tedious process to get the launch system ready. It takes a lot of teamwork from the United Launch Alliance workers with members of the 5th Space Launch Squadron and mission assurance technicians who minimize the risk and make sure everything is done safely and efficiently as possible with eyes on everything. They’ve got it down to a fine art.”

A Delta II booster blasts off from Space Launch Complex 17-B at Cape Canaveral Air Force Station.



Leaving no room for error, the mission assurance technicians follow each task to full completion. They make sure every screw is secure and every technical order is followed to the letter.

“There have been times when we have identified an area that needed additional attention, and when we do, it makes us feel like we may have helped save that mission or keep that mission on track,” said Tech. Sgt. Marshall McBride, a mission assurance technician with the 5th SLS who oversees production of Delta rockets. “These satellites on these rockets help warfighters every day from flying planes to carrying out ground operations.”

The Evolved Expendable Launch Vehicle, Atlas V and Delta IV are part of a new era of space lift vehicles that will serve as the primary vehicles to take national military space assets along with

civil, commercial and scientific payloads into space for the foreseeable future. EELVs are the cornerstone for launching national and military space assets that provide global communications, precision navigation, early warning of attack and other classified missions into orbit. Delta IVs and Atlas Vs have become the next generation of workhorses of heavy launch capability that carry payloads into geosynchronous orbit.

As the rocket teams work to ensure launch vehicles hit the exact orbit, members of the 45th Launch Support Squadron prepare, test and verify the payloads for the rockets are ready for their mission. When they come from the factory, 45th LCSS members ensure the satellites are prepared to perform their mission 24/7/365 for up to 15 years.

“The rocket team hits the bull’s eye. We make sure that once the spacecraft is in orbit that the spacecraft works as designed and then is able to activate and perform its mission,” said Lt. Col. John Wagner, the 45th LCSS commander. “There are lots and lots of checks. It is not just about a technician turning a wrench; it is about us verifying it, recording it and reviewing it. We come as close to perfection as we can. We are and have to be methodical. This is our last chance to get it right. You cannot bring a satellite back to earth and modify it.”

Air Force specialists even monitor payloads being prepared before they are mated with launch vehicles. Tech. Sgt. Bobby Chrum, a mission assurance technician with the 45th LCSS, works with contractors to make certain a satellite is fully operational prior to being launched. Dressed in an all-white jumpsuit with a hairnet, Sergeant Chrum works in a sterile environment as the satellite is processed and readied to be loaded onto a rocket.

“I watch over all their procedures and verify that criteria set up by the Air Force are followed,” said Sergeant Chrum. “Nothing is perfect, and that is why we are here. The potential is always there for a speck of dirt or a loose screw, so we are an extra set of eyes, but we strive for perfection.”

Another satellite system put into orbit by the 45th SW is the Global Positioning System that helps warfighters know exactly where they are or where a weapon system should be placed using guided weapons. GPS is relied upon by a wide range of civil, scientific and commercial functions that most people aren’t even aware of. GPS satellites support maritime shipping and air travel, and today you can find GPS systems in people’s cars and cell phones. The precise timing provided by GPS satellites are used worldwide by banking institutions every time you swipe your debit or credit card. All of the GPS satellites used today were launched at the most active space launch complex in the world, Cape Canaveral AFS.

“We simply have to get these missions right,” said Brig. Gen. Edward L. “Ed” Bolton Jr., commander, 45th SW. “In our business, you may get a second count, but you can’t have a second chance. Space power is pivotal to the success of U.S. military operations. In an era of declining manpower and resources, space-based capabilities allow us to provide intelligence, global positioning, weather and communications information directly to the warfighters and this enables the American military to be more lethal with a smaller force.”

Wing officials operate Cape Canaveral AFS and the 15-million square mile Eastern Range, which is a network of instrumentation sites that track launch vehicles. But nothing could be accomplished without the constant attention to and awareness of the weather. Forecasters must warn officials if storms or strong winds might

hamper maintenance on launch vehicles or their movement to launch pads.

The 45th Weather Squadron Weather Operations Center provides day-to-day weather support for Air Force assets and NASA officials. Unit personnel have a joint relationship with the National Weather Service in Melbourne, Fla., to help protect base assets and share information with the National Weather Service to keep people who live in the area informed of pending hurricanes or severe storms. In addition, the Space Shuttle cannot launch without the guidance and forecasts of the 45th WS staff.

“A lot of decisions made by NASA officials throughout the countdown to launch rely on our forecasts,” said 1st Lt. Greg Strong, range weather operations flight commander at Cape Canaveral AFS. “We have a joint relationship with the space flight meteorology group in Houston, and we support the shuttle while it is on the ground at Kennedy Space Center until the shuttle leaves the launch pad and even if it lands back at Cape Canaveral AFS. There is also a launch weather officer dedicated to the NASA mission who gives timely updates every day leading up to a launch, and on the day of launch, a team of launch weather officers give direct support to NASA.”

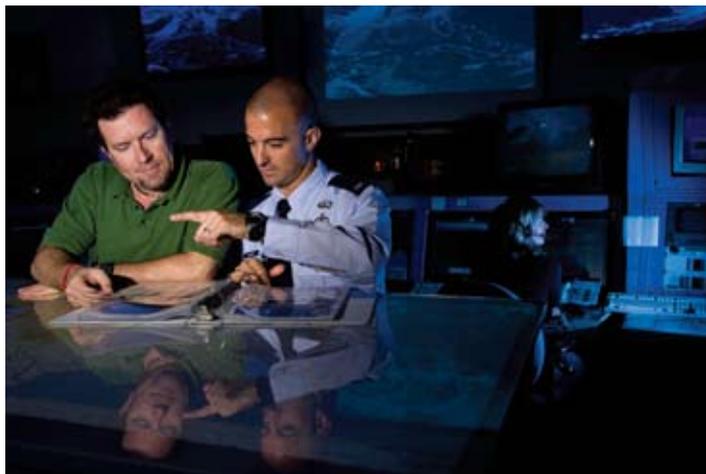
NASA and Air Force missions here depend on weather forecasts for launches and whenever work is done on launch vehicles on the launch pads. Winds and storms are monitored by Air Force weather forecasters, and being on the East Coast, hurricane season keeps eyes focused on Atlantic storms. But the most dangerous weather-related phenomenon is lightning, as Cape Canaveral AFS is in the lightning capital of the country.

“From Tampa up to Daytona, there are more flashes of lightning per kilometer than anywhere else,” the lieutenant said.

Air Force officials learned to observe and better predict lightning in the atmosphere after an Atlas-Centaur 67 launched from here March 26, 1987. Even though there was no actual lightning occurring in the area, after the vehicle launched there was so much electric charge built up in the atmosphere that it triggered a lightning strike that severely damaged the rocket and it had to be destroyed 54 seconds after launch.

Lightning is just one of more than 20 weather conditions that could prompt 45th WS officials to halt launches as the forecasters inform launch officials of all conditions that may prevent a successful launch.

“The National Lightning Detection System shows where lightning happened, but here we now have a system that gives us a three-dimensional view that can read conditions in the atmosphere so we can forecast the likelihood of a lightning occurrence,” said Lieutenant Strong. “We have to do our best to mitigate the likelihood of anything negatively happening for all launches.”



1st Lt. Greg Strong and Joel Tumbiolo discuss preparations for the launch of shuttle mission STS-119. Lieutenant Strong is a range weather operations flight commander and Tumbiolo is a NASA launch weather officer from the 45th Weather Squadron, Patrick Air Force Base, Fla.



Capt. Brian Capps, left, and 1st Lt. Dario Plazas work with NASA to manage and determine a clear launch window for a simulated launch of a Delta II rocket. Captain Capps is the chief contingency training officer and Lieutenant Plazas is simulating the part of the Air Force launch crew commander.



Mission Assurance Technicians, Tech. Sgt. Marshall McBride, left, Tech. Sgt. Tony Lamb, center, and Staff Sgt. Clement Blackmon conduct a walk-around operations check of a Delta IV rocket being prepared for flight.



Tech. Sgt. Bobby Chrum, left, oversees preparation of a Global Positioning System satellite. Sergeant Chrum works with NASA contractors to make certain a satellite is fully operational prior to launch.

Also working with NASA are officials from the Det. 3, 45th Operations Group at Patrick AFB, the only full-time office coordinating Defense Department support for human space flight programs. The staff supports NASA's Space Shuttle, the International Space Station, Russian Soyuz missions and the upcoming Constellation Program missions.

Prior to each Space Shuttle mission, Det. 3 members coordinate the launch with personnel in the U.S. Strategic Command Joint Functional Component Command for Space, which includes Air Force, Marine Corps and Coast Guard assets at Kennedy Space Center. Members of Det. 3 also are staged during launches at trans-Atlantic Ocean landing sites in Spain and France to coordinate DOD forces' efforts. Whenever a Space Shuttle is in the air, the unit operates the DOD Support Operations Center at Patrick AFB that serves as the focal point for coordinating the DOD response for a Space Shuttle emergency.



Brig. Gen. Edward Bolton explains the cooperative relationship between the Air Force and NASA. General Bolton is the commander of the 45th Space Wing.

Leading the Air Force support for the Space Shuttle program is Mr. Mike Gawel, the Space Shuttle program support manager for the 45th SW. In this position for 10 years, he is the central contact for the Air Force and has supported 30 shuttle missions, including the latest Space Shuttle Discovery mission that lifted off March 15 at Kennedy Space Center and returned to Florida March 28.

"We work with NASA to refine all their requirements and meet everything they need for a successful Space Shuttle mission," he said. With the Space Shuttle scheduled to retire in 2010, Gawel next will become the Constellation program support manager as NASA transitions from human space flight in shuttles to the Ares rockets with the Orion crew vehicle scheduled to take humans to the moon and later to Mars.

"We are currently working with NASA to build all the requirements to safely launch the Ares 1-X this summer," said Gawel. "We pay attention to all details for all missions because one wrong thing can be catastrophic."

“We take safety and the life of the crew very seriously,” said Mr. Jeffrey Skaja, a NASA test director. As a propellant propulsion expert, Skaja works on the Space Shuttle program and is transitioning to the Ares program. He integrates all NASA activities on Kennedy Space Center for the Space Shuttle program from landing to launch.

“I first came to the Kennedy Space Center on a tour of NASA with my family when I was in the second grade. From then on, I knew I wanted to be involved with space,” said Skaja, who is also a major in the Air Force Reserve assigned to the Launch and Range Space Wing for the Space and Missile Center at Los Angeles AFB, Calif. Prior to joining NASA, he was an active-duty officer working rocket propulsion development and was a support flight commander providing engineering support for rocket launches and satellite processing. “The Air Force has enabled me to do spacecraft processing and to be involved with satellite programs. The exposure to all the programs and the different aspects of them all, from budgets to working facilities management, has helped me learn what it takes to put a vehicle into orbit. The Air Force always has provided me with a lot of opportunities and helped make my dream come true.”

Air Force officials have helped NASA over the decades during the Gemini, Mercury and Apollo missions, Deep Space 1 that tested advanced technologies in space, Genesis that helped determine the composition of the sun, and the Mars Exploration Rovers. Next for NASA includes the Lunar Reconnaissance Orbiter that will map the moon’s surface to locate possible landing locations for a manned return to the moon, and support for the Constellation program.

“Our support for NASA is bigger than just the Space Shuttle,” General Bolton said. “We support the Kepler, Hubble and other

state of Florida, subject to a favorable outcome of environment impact study results. They will market it as a commercial launch platform. We have also licensed a pad to SpaceX, which has a new rocket called the Falcon 9 that is scheduled for launch from Cape Canaveral Air Force Station this year. SpaceX has many launches manifested, and we hope they will bring back some of the commercial launch businesses to the Cape.”

Unlike most businesses suffering from current economic hardships, “space is a growth industry,” said General Bolton. “We had seven launches in 2008. This year we have manifested more than two dozen launches. We just completed four launches and a shuttle landing – all 100 percent successful – in only 29 days. It is still important that the United States be No. 1 in space. Our first priority is our DoD mission, but we also want to be good corporate partners. If we can better foster growth in commercial space, that pushes our technology forward, and that is good for our country.”

“Our No. 1 focus is mission success,” said General Bolton. “With all launches, we ensure safe operations, environmental protection and positive control of the system throughout flight.”

With control of air and space, American warfighters are given that extra edge to win battles and to succeed in all expeditionary operations.

“The Airmen here are part of the fight by providing intelligence, global positioning, weather and communications for the warfighters,” the general said. “Space is first. It is where the intelligence satellites help us track friends and foes. GPS helps tell people and our warfighters exactly where they are anywhere in the world, and this technology has helped with precise targeting of GPS-guided munitions. We also need weather awareness to support airpower.



Mr. Mike Gawel explains the Space Shuttle’s trajectory into space while standing underneath one of Space Shuttle Discovery’s three main engines used to steer the shuttle. Gawel is Space Shuttle program support manager for the 1st Range Operations Squadron, Cape Canaveral Air Force Station, Fla.

scientific missions. These important missions were launched from here. Kepler, for example, will look into the deepest regions of the galaxy for other planets like Earth.”

Air Force officials have two more Delta II launches and NASA has fewer than four from that launch vehicle. But the next logical question is how to dispose of that launch pad and be environmentally smart.

“We and our partner, NASA, will have to come up with an environmentally friendly way plan to deconstruct the pad,” said General Bolton. “We still have several launch pads used for the Mercury, Gemini and Apollo missions to disposition. We must also rightsize our infrastructure by removing facilities that we do not use – by either mothballing them or letting corporate partners lease them. That saves us the cost of maintaining the facility.

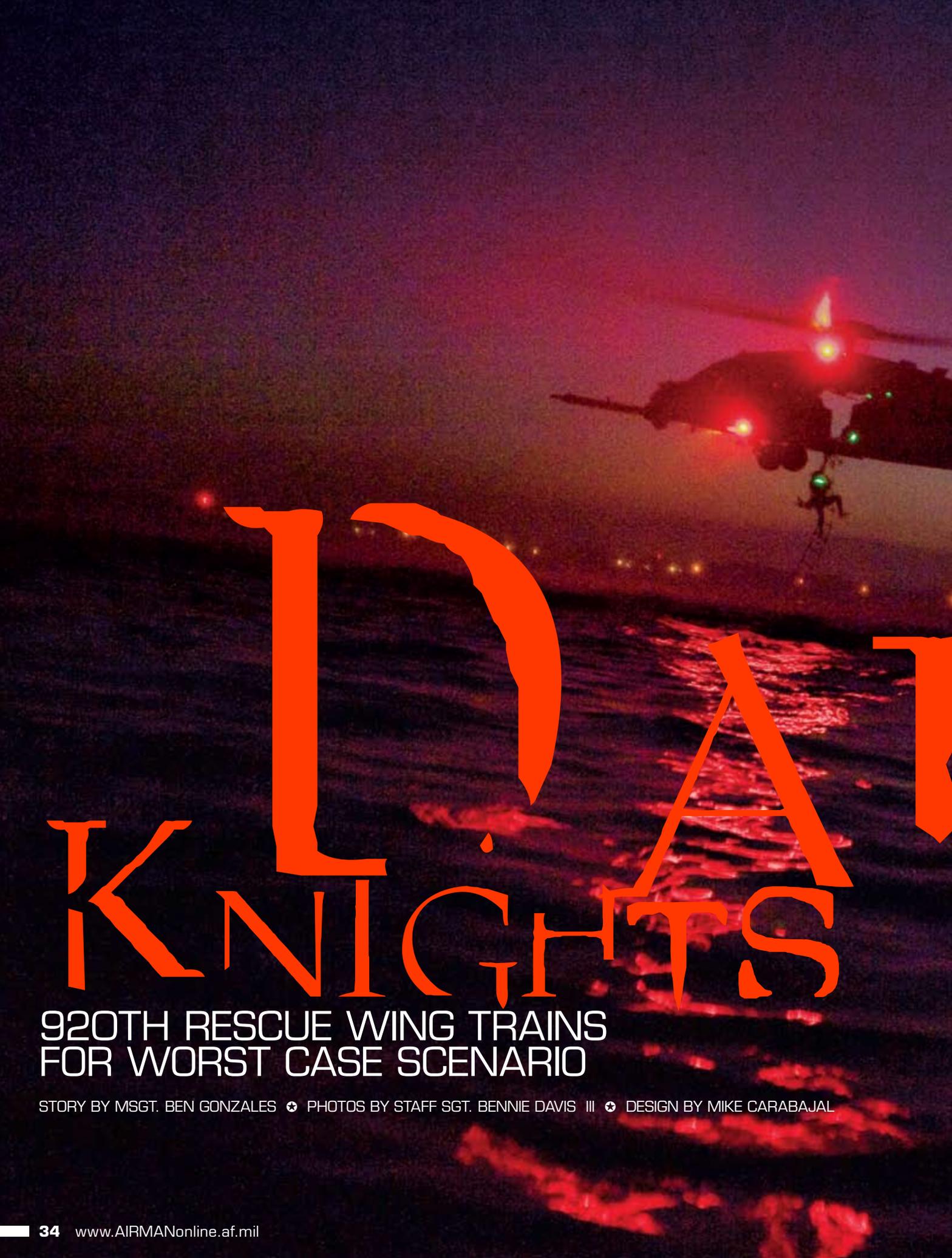
“As a result of our strong partnership with the state of Florida for commercial space, are in the process of licensing a pad to the



1st Lt. Jayson Andersen works with NASA as a console operator during an integrated crew exercise for the launch of a Delta II rocket at Cape Canaveral Air Force Station, Fla.

Weather satellites start from here too. And communications is vital. Secure-communications satellites originated from here, so when American warfighters are talking in theater it is enabled by Space Command.”

Space-based capabilities today allow pilots to put bombs exactly on target while troops on the ground have the upper hand in the fight with intelligence, global positioning, weather and communications information readily available. Battles are being won and coalition lives are being saved. Furthermore, the quality of our lives have vastly improved as space assets allow us to navigate in our cars, send text messages instantly and even purchase everyday items through the swipe of debit and credit cards without giving it a second thought. Through the tireless efforts to ensure space assets were completely ready prior to launch, officials from the 45th SW give us all these advantages that servicemembers and Americans rely on everywhere, every day. 🦅



KNIGHTS

920TH RESCUE WING TRAINS
FOR WORST CASE SCENARIO

STORY BY MSGT. BEN GONZALES ✦ PHOTOS BY STAFF SGT. BENNIE DAVIS III ✦ DESIGN BY MIKE CARABAJAL

Pararescuemen of the 920th Rescue Wing climb aboard a HH-60G Pave Hawk by rope ladder from the cold waters of the Banana River in Florida. During this training, pararescuemen jump from the aircraft at 10 feet while traveling 10 knots above the water's surface.



RTK

As the sun slipped away one evening in February, beyond the Florida coastline, as darkness set in on a moonless night, Tech. Sgt. Blain Morgan had to prove once again he is ready. The pararescuer from the 308th Rescue Squadron was about to engage in 10 and 10s: fast-roping down 10 feet from a HH-60G Pave Hawk moving at 10 knots into the cold waters of the Banana River just off of Patrick Air Force Base, Fla. He and his team of Air Force Reservists had to fast-rope out of the helicopter carrying more than 40 pounds of gear, wade in water cold enough to take their breaths away, then climb back into the HH-60G. But Sergeant Morgan is ready for this. He keeps warm with a wet suit underneath his soaked battle dress uniform. His eyes pierced the black night. The only lights emanated from the green glow sticks he and the rest of the team wore attached to their shoulders. After the pararescuemen safely fast roped down into the water, the HH-60G disappeared into the sky and circled the area before coming back to pick up the team. Again, the helicopter dropped down to 10 feet above the surface. A rope ladder was tossed from the chopper and the pararescuemen — dripping and fighting to stay warm — struggled to climb back up into the hovering HH-60G.

When they finished, the entire team of Reservists started from the beginning and did the training all over again. This type of training never ends for pararescuemen, because it's this type of training that is vital to saving lives.

With the world's second-largest ocean just a stone's throw away, day and nighttime water training is crucial for the members of the 920th Rescue Wing, stationed at Patrick AFB. The training that night was designed to prove they are ready to support a NASA Space Shuttle crew in the event of a bail out over the ocean. Whenever a shuttle launches, wing assets are spread out across the globe; ready and in place for worst-case scenarios.

"We train for everything — water training, mountain rescues, shuttle operations, nighttime scenarios — whatever it takes to help people out," said Sergeant Morgan after climbing into a 21-foot boat, river water still dripping off of his body after completing a set of 10 and 10s. "We have to be ready for anything, because you never know what you are going to face when you have to save lives."

"The NASA support mission requires some unique training and skills," said Col. Jeff Macrander, the 920th Operations Group commander. "Every time a shuttle goes off, we have to be ready for that worst-case scenario where the shuttle crew would bail out over the ocean — that would require two HC-130s and four HH-60Gs. We also train to deploy the Rapid Air Mobile Zodiac, which is a rubber boat with parachutes attached to it that can be pushed out the back of an HC-130. Pararescuemen jump after the RAMZ to inflate the boat that can help rescue astronauts."

In addition to their highly-specialized pararescue training, PJs must also undergo training on the workings of the highly-technical Advanced Crew Escape Suits, which shuttle crewmembers wear during all launches and landings. In March, pararescuemen began training with NASA's next generation spacecraft, as the 920th Airmen learned how to extract astronauts from the Orion capsule in a water-landing scenario. The Orion is part of the Constellation space program, which is scheduled to replace the space shuttle.

But 920th RQW Airmen are not only trained to save astronauts, their primary mission is to rescue warfighters in bad situations.

"We are the only Air Force agency that mans, trains and equips a force to do combat rescue," said Colonel Macrander, who piloted HH-60Gs in Operations Iraqi and Enduring Freedom. "It's hugely important to the morale of our fighting force that they know — if they are sent behind enemy lines, we can penetrate an enemy area with (the HH-60G) and go in and grab our guys."

To perform search-and-rescue missions takes a fleet of HH-60G and HC-130P/N refueling aircraft, although the real work comes

"We train for everything — water training, mountain rescues, shuttle operations, nighttime scenarios — whatever it takes to help people out. We have to be ready for anything because you never know what you are going to face when you have to save lives."

— Tech. Sgt. Blain Morgan



Pararescuemen from the Air Force Reserve Command's 920th Rescue Wing train with HH-60G Pave Hawks to locate, rescue and provide medical treatment to astronauts in case of an emergency during launch or landing. Pararescuemen also support rescue efforts in the aftermath of disasters such as hurricanes, floods and earthquakes.

Tech. Sgt. Wes Hufnagel,
an Air Force Reserve
pararescueman, ignites
a signal flare during a
rescue-training mission
in preparation for space
shuttle mission STS-119 at
Patrick Air Force Base, Fla.
The 920th Rescue Wing
provides primary rescue
support for astronauts
during all shuttle launches.





Pararescueman Senior Airman Dan Warren rises from the waters of the Banana River in Florida. The 920th Rescue Wing must locate, rescue and provide medical treatment to astronauts in the event of an emergency during launch or landing.



An Air Force Reserve pararescueman of the 920th Rescue Wing surveys the Banana River off the coast of Patrick Air Force Base, Fla. Light sticks are worn as a safety precaution while conducting nighttime water rescue training exercises. The wing is training in preparation of a possible rescue of NASA astronauts in the event of a shuttle bailout.

from the Airmen. This elite group of men go through rigorous training that can take up to 24 months to earn the title of pararescueman. They're the only Department of Defense specialty specifically trained and equipped to conduct conventional and unconventional rescue operations.

Pararescuemen can extract, treat, stabilize and evacuate injured personnel while acting in an enemy-evading and recovery role. They maintain emergency medical technician-paramedic qualifications throughout their careers. To become a pararescueman they must complete the Pararescue Preparatory Course, Army Airborne School, Air Force Combat Diver School, Navy Underwater Egress Training, Air Force Basic Survival School, Army Military Free Fall Parachutist School, a Paramedic Course and the Pararescue Recovery Specialist Course.

Once they finish their courses, they've only just begun. After an additional year of operational training back at the 920th, they are ready to deploy on an actual rescue mission. Now they must be ready at a moment's notice to respond to those in need.

While some Airmen perform their jobs in an office, pararescuemen earn their pay chiseling their bodies at the gym and pushing themselves to be the best they can be as they run countless miles on endless roads. Staying in top physical shape for them isn't an option, it's a necessity. When they're called to help someone in need, there is no room for error, no time for rest and the cold reality that their level of individual strength and willpower may mean the difference between saving or losing a life.

"That others may live," is the last line of the oath all pararescuemen take at the end of their training, but the words are taken to heart by all members of the 920th RQW. This unit is unique in the Air Force as it is made up of more than 1,500 Reservists. Some are full-time Air Reserve Technicians or Active Guard Reservists, and others are traditional Reservists, serving part-time while holding down civilian jobs.

Airmen assigned to this Air Force Reserve Command unit are heavily involved in combat missions where they search for, locate and recover American servicemembers. In 2005, the wing deployed to Afghanistan in support of Operation Enduring Freedom. While deployed the unit made 54 combat rescues. In February 2008, the wing again deployed to Afghanistan for a 14-month mission to assist with medical evacuations as the

number of insurgent attacks increased.

"Since February 2008, we helped save more than 300 warfighters in (medical evacuation) missions in Afghanistan," said Colonel Macrander.

But the 920th, with its 23 subordinate groups and squadrons – including two geographically separated units at Portland, Ore., and Davis-Monthan Air Force Base, Ariz. – also provides worldwide-humanitarian relief, as wing members support rescue efforts in the aftermath of disasters such as hurricanes, floods and earthquakes. They're also called upon by officials from the Air Force Rescue Coordination Center at Tyndall AFB, Fla., to assist in the search and rescue of people lost in the mountains or at sea.

Wing members saved 137 residents in south Florida following Hurricane Andrew in 1992, and another 93 Tampa-area residents from flood waters in 1993.

More than 200 people were rescued after Hurricane Floyd in 1999, and the wing is credited with saving 1,043 people after hurricanes Katrina and Rita in 2005. The unit also supported relief efforts for 2008 hurricanes Gustav and Ike with more than a dozen rescues for those storms.

The unit is called out to assist the Coast Guard on search and rescue missions about four times a year, with the latest effort in early March. Airmen from the 920th helped in the search effort for four missing boaters — including two NFL players — whose boat capsized in a 24,000-square-mile area in the Gulf of Mexico. Although three boaters were lost, the 920th assisted the Coast Guard in rescuing one person from the rough and chilly waters.

To be the best, you have to prepare for the worst. When Mother Nature unleashes her fury, when a boat capsizes out at sea, when a person is injured while mountain climbing, or when warfighters are down and need assistance, the members of the 920th RQW are trained and ready wherever and whenever they are needed.

"We get a lot of satisfaction knowing we returned somebody's loved one to his or her family," said Colonel Macrander, who helped save a Navy SEAL who was the lone survivor of a four-person team ambushed deep in al-Qaida territory in 2005.

"To see the smiles on their faces knowing they came back home is truly rewarding in and of itself," the colonel said. "There is no greater mission than to use your skills and go out and save somebody's life." 🦋

PAVE HAWK RESCUE

TOOLS OF THE TRADE

SENIOR AIRMAN DAN WARREN



DESIGN BY G. PATRICK HARRIS • PHOTOS BY STAFF SGT. BENNIE J. DAVIS III

Airman

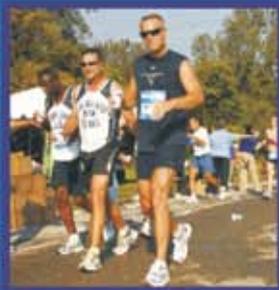
- 1 Spuds bottle and regulator:** small emergency scuba oxygen tank; holds 10-20 minutes of air. **2 Snorkel and Diving Mask.** **3 Knife/Dive tool:** used to cut away parachute cords or help trapped victims. **4 Swim Fins.** **5 Parachute:** MC1-1D steerable Troop Assault Parachute for static line airborne operations; low-altitude jumps 800-1500 ft. Parachute is able to deploy from C-130 or HH-60 Pave Hawk Helicopter. T-10 chest reserve chute; smaller parachute pack; emergency reserve. **6 Medical Pack:** NASA Alert load; stocked with enough medical supplies for two trauma patients. **7 Stokes Litter:** rescue basket used to securely transport critically injured in and out of HH-60 Pave Hawk helicopters. **8 Zoll Defibrillator:** monitors pulse, blood pressure and temperature displayed with a 12-lead electrocardiogram print-out; housed in a portable compact unit.

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GUARDIANS OF GREEN

STORY BY MASTER SGT. BEN GONZALES ✪ PHOTOS BY STAFF SGT. BENNIE J. DAVIS III
DESIGN BY G. PATRICK HARRIS

Mangrove trees (left) line the coast of Cape Canaveral Air Force Station, Fla. Mangroves grow in brackish coastal habitats and the trees provide valuable protection against erosion. The mangrove roots provide support to unique marine ecosystems.



When a NASA space shuttle lifts off from Kennedy Space Center in Florida people from miles around can feel the roar of the launch. The 800,000 pounds of thrust from the solid rocket boosters shakes and rumbles the entire Cape Canaveral region as they lift the 4.5-million pound shuttle into orbit. The smoke from the liquid oxygen and liquid hydrogen rockets billows around the launch pad and up into the sky, showing the trail of the shuttle as it blazes into orbit.

Air Force Delta and Atlas rockets also soar into the sky from nearby Cape Canaveral Air Force Station. To protect citizens from the hazards of the space mission, people cannot live inside the Cape area, but there are still native residents who have no choice but to stay so close to the dangerous environment. Alligators, sea turtles and Florida scrub jays are just three of the approximate 40 types of animals, birds, reptiles and plants that are indigenous to the area that are endangered and protected.

With the hazards that come from mankind's need to use space, Air Force officials are committed to taking care of the environment and to do all they can to preserve and protect all living creatures at this and every Air Force installation.

"We have 11 federally listed threatened and endangered species here, a number of species of concern, lots of state listed species, and then protected species," said Don George, a natural resource manager with the 45th Civil Engineer Squadron at Patrick Air Force Base, Fla. "We have a lot of undeveloped land and because of some of the items on Air Force property (like solid fuel storage areas), you cannot build too close to a lot of areas here. Our job is to manage these habitats in a way that preserves these species and hopefully enhances their survival."

Take, for instance, the scrub jay population, which is covered under the Endangered Species Act. The Florida scrub jay is found only in central Florida where the land is nutrient-poor soil, or scrub habitat, and they bury acorns like a squirrel would. The bird is tame, lives in family units and shows almost no fear of people.

Before base officials began looking at protecting this territorial bird, the number of scrub jays dwindled over the years. The mismanagement of the land and the development in Florida has led to the loss of the scrub jay habitat. Only 9 percent of the historic scrub areas are still present in Brevard County, which relates directly to how many scrub jays you have, Mr. George said.

Cape Canaveral AFS is made up of 15,800 square acres, of which 8,000 square acres are habitable for the scrub jay. In addition to the number of acres that affects the population of scrub jays, snakes, hawks and even vehicles are hazardous to their existence.

"Scrub jays are low- and slow-flying birds. By lowering the speed limit to 35 mph in the industrial areas where scrub jays are on Cape Canaveral AFS, we avoid the numbers of collisions vehicles have with scrub jays," said Lex Stokes, the 45th CES Environmental Flight chief.

"The scrub jay (population) goes up every year in the

The Florida Scrub Jay is one of 11 protected species at Cape Canaveral, Fla. The Scrub Jay does not migrate and lives in oak scrubs where it defends the acorn crops. Base officials are sanctioning 2,000 acres of land to provide a natural scrub habitat.



Wildlife biologists transport a 10-foot alligator to the shores of the Kennedy Space Center in Florida. The biologists provide environmental monitoring and ecological studies to help preserve the Merritt Island National Wildlife Refuge.



area,” Mr. George said. More than 2,000 acres of the Cape is dedicated to preserving the natural scrub habitat, which can only raise the number of scrub jays in the area.

“But we cannot manage the environment just for scrub jays alone,” Mr. Stokes said. “All the animal habitats in the Cape are not exactly the same, but we manage them all the best that we can.”

The environmental program is a holistic program, he added. “It is all about human health, protecting the environment and making good use of all our resources. We care about doing the right thing, we care about the mission and we care for our environment. Our air and water are much cleaner today than the past 40 years.”

And making sure the water around Cape Canaveral AFS is clean is a team of biologists contracted by Cape Canaveral officials.

“We do biological inventories of the waters that include water-quality monitoring, manatee oversights, and fisheries research as we build an inventory of all the fish found in the Cape,” said Eric Reyier, a fisheries biologist with Dynamac Corp. “There is heavy industry going on around here with the space mission, and the assumption is that it is detrimental to the fish and wildlife. As it turns out, a lot of this area is vastly undeveloped so the habitat and wildlife are actually in excellent shape as compared to other areas along the East Coast. Everybody is working together to effectively manage the plants and animals that are out here on the Cape.”

One of the species that is thriving in the area is the alligator. If there is a body of water on the Cape, you can rest assured that there is one of the flourishing reptiles close by. Checking alligators’ health

shows the condition of the environment for the animal and also for the people who work here.

“We catch alligators so we can take blood and urine samples for analysis,” said Russell Lowers, a wildlife biologist with Dynamac Corp. “Alligators eat everything in the environment from fish to

turtles to birds and from raccoons to pigs. If there are any contaminants in the ecosystem, they will be gathered and eaten by this animal, where they would be stored in its body in fat and excreted in its urine. We run a hormone analysis and the toxicology on the animals to get a good snapshot of what’s going on within the area.”

Keeping the Cape environmentally friendly takes time, effort from members of the 45th CES, and money – an average annual budget of about \$25 million — that goes toward compliance, restoration, conservation and pollution prevention. It also takes compassion to understand how to care for the entire Air Force station that is made up of wetlands, coastal maritime hammocks, coastal strands, coastal dunes, and the longest undeveloped beach in Florida, which makes a perfect nesting place for sea turtles.

Three species of sea turtles — loggerheads, green turtles and leatherback turtles — nest on Cape Canaveral AFS beaches. All sea turtles are listed as threatened or endangered, but the leatherback is listed as critically endangered. Nesting levels for the loggerhead in Florida have declined from almost 86,000 nests in 1998 to just more than 45,000 in 2007 in Florida. The global

leatherback sea turtle number of nesting females has gone from an estimated 115,000 in 1980 to somewhere between 26,000 to 43,000 recently.



The roseate spoonbill is a threatened species of bird found mostly in swamplands and the Gulf Coast. A spoonbill is commonly misidentified by Florida tourists as a flamingo.



Thousands of nine-banded armadillo can be found roaming the grounds of Cape Canaveral Air Station, Fla. The armadillo is a leathery-shelled mammal, a cousin to anteaters and sloth. Armadillo is Spanish for “little armored one.”



This regional coastline is the epicenter for sea turtle nesting in this whole hemisphere. And during sea turtle nesting season — April through September — a member from the 45th CES Environmental Flight is on the beach every morning to monitor the nests and check the productivity of the hatchlings.

Of the approximate 100 eggs laid by sea turtles in a nest, only one will make it to adulthood, said Mable O’Quinn, a biological scientist and a conservation law enforcement officer for Cape Canaveral AFS. To help protect the sea turtle eggs, base officials put predator screens over the nests to keep raccoons and hogs away from nests.

“A major human impact on all sea turtles is exterior lighting that disorients hatchlings,” Mr. George said. Once turtles hatch from their eggs, they rely on light to guide them to the ocean, and if there are lights anywhere close to the nests, the sea turtles will become confused and will go toward whatever light they see.

“The 45th Space Wing – Patrick AFB and Cape Canaveral – are the global leaders in light management,” he said. “When you come on the Cape at night, it is dark. Low-pressure sodium lights that give off a yellow light are the only lights that do not confuse the sea turtles along the whole Cape.”

Air Force officials are giving sea turtles a fighting chance at survival and prospering by limiting regional predators and unnatural lighting, but when a foreign species invades or is brought into the region, there is no natural foe to balance its growth. One such invader, the Brazilian pepper tree, is a shrub or tree that reaches over 30 feet in height that was introduced into Florida in the mid-1800’s for use as an ornamental plant. Its bright red berries and brilliant green foliage were used as Christmas decorations.

“The Brazilian pepper tree outcompetes the native vegetation,”



Donald Humphreys, a senior environmental scientist for Cape Canaveral Air Force Station, Fla., drives a herbicide buggy used to spray toxins to help eliminate unwanted Brazilian pepper trees and cogon grass.



The Brazilian Red Pepper trees are threatening the native ecosystem of Cape Canaveral and the Merritt Island National Wildlife Refuge in Florida. The peppers grow quickly into a dense 15-25 foot barrier that shades out or excludes native species of mangrove trees and wildlife. The peppers are combated by using chemical herbicides or mowing down.

The 137-foot tall Cape Canaveral lighthouse is the only fully operational lighthouse in the Air Force. Built in 1868, the lighthouse was appointed to move inland one mile by the Congress due to beach erosion.

Mr. George said. “When it grows, it shades out the mangrove seedlings and leatherwood ferns and others and infests the area with a thick growth and keeps the natural wildlife from growing in areas.”

Base officials are in the process of developing techniques to slow and hopefully stop the spread of the Brazilian pepper tree, and that will help not only the Air Force installation, but also the entire state where the tree has spread.

“Whether it is a turtle at the Cape, a manatee in our marina, or the scrub jay, the 45th Space Wing does everything possible to ensure the ‘first inhabitants’ of the Cape have a healthy and thriving environment for decades to come,” said Brig. Gen. Edward L. “Ed” Bolton Jr., the 45th SW commander and director of the Eastern

Range at Patrick AFB that supports an average of 20 missions per year aboard Delta and Atlas launch vehicles.

Cape Canaveral was chosen for rocket launches to take advantage of the earth’s rotation because the linear velocity of the Earth’s surface is greatest toward the equator. Launches at the Cape allow rockets to take advantage of this by launching eastward, in the same direction as the earth’s rotation. It is also highly desirable to have the down-range area sparsely populated in case of accidents, and the Atlantic Ocean is ideal for this. But during the race to space in the 1950s and ‘60s, federal laws and regulations concerning the environment were not in place.

“At the time, we didn’t know what damage was being done to the ground water, but now we have projects worth millions of dollars to clean up the environment,” Ms. O’Quinn said. “We have the installation restoration program dealing with the clean up from

launches done in the past. Plus we have an active hazardous waste program and pollution prevention program to make sure we do not make the same mistakes that we have done in the past.”

Cape Canaveral Air Force Station Launch Complex 34 was a launch site used by NASA during the Apollo Program and used for the launch of Saturn rockets. The complex is now a memorial to Apollo 1 astronauts who gave their lives to space exploration during a fire inside the Apollo spacecraft January 27, 1967.





Mable O'Quinn, a Cape Canaveral Air Force Station biological scientist and conservation law enforcement officer, wipes away algae from headstones in the Quarterman family cemetery. The Quartermans were a pioneer family of Cape Canaveral in the mid-1800s.

Not only do Air Force officials take care of the environment, but also they recycle old products and make them new again. One facility on station once used for space exploration in the past is now being refurbished for the National Reconnaissance Office to launch satellites to help warfighters in the future. And a lighthouse on Cape Canaveral AFS originally built in 1848 still stands and is the only fully operational lighthouse owned by the Air Force. Base officials even preserve history by refurbishing old rockets and other launch vehicles and then storing them in a hangar on Cape Canaveral AFS instead of letting the humid coastal air erode these reminders of our space mission's past.

But long before the American government decided to use this land for the space mission, the Cape area was inhabited by people who only looked at the stars and not soared up to them. There are more than 100 recorded archaeological sites on Cape Canaveral AFS. In Titusville just up the road from the Air Force station, marine shell and shark tooth tools have been found at a site that dates back 8,000 years. A spring-fed pond potentially existed in prehistoric times, and conventional thought has humans arriving in the area 5,000 years ago and about 500 years ago Spanish explorer Ponce de Leon came to the Cape area looking for the fountain of youth.

Cape Canaveral earned its name of Spanish origin, which translated as "Place of the Cane Bearers," when Spanish explorer Francisco Gordillo was shot by native Ais Indians in the Cape area who used arrows made of cane to drive away unwanted explorers and sailors.

Ancient Indian burial mounds still dot the area. Historic home and fort foundations from habitants from the 1700s and 1800s also can be found in the area. And several family cemeteries are located on the Air Force station. Base officials manage these precious assets with formal archaeological surveys and protect the area while respecting its legacy.

"Preserving our heritage shows our lineage to the next generations," said Dr. Sonny Witt, the 45th Mission Support Group Det. 1 director of operations responsible for the maintenance, utilization, security and environmental protection of the Cape. "We must do all that we can to preserve our history, care for our environment and comply with standards to make the Cape a wonderful place for generations to come because it is not only our responsibility, but also it is the right thing to do." 

STORY BY STAFF SGT. MATTHEW ROSINE ★ PHOTOS BY STAFF SGT. DESIREE PALACIOS

ABOVE AND BEYOND... PLANET EARTH

When I was a child, I wanted to be either a cowboy or an astronaut – or better yet, a space cowboy.

I suppose that blasting off into an uncharted, unforgiving and unknown adventure far from the dusty southern Oklahoma landscape of my childhood was very exciting. I was a normal kid with big ideas and bigger dreams.

Like most children, those big ideas and dreams somehow get smaller as we grow into adulthood.

Every so often, as adults, something magical happens, and we find ourselves standing in the light of our childhood dreams. This happened to me recently while I was on an assignment to the National Aeronautics and Space Administration in Houston.

I have been sent on a few assignments there over the past few years – actually, every chance I could manage. It's really an amazing place to see, and by the nature of my job, as a military journalist, I have been allowed to go behind the scenes at NASA more than once. I've joked and laughed with astronauts, fellow Airmen. I've felt the saturated air of the Neutral Buoyancy Lab on my skin, where astronauts do all of their "water" training. I've smelled the overly clean, slightly metallic air inside the astronaut training modules, and I've stood in the original mission control room where America's earliest space pioneers braved the unknown.



Staff Sgt. Matthew Rosine test drives a lunar rover at NASA's Johnson Space Center in Houston. The rover will be used on a future manned mission to the moon. Sergeant Rosine is associate editor of *Airman* Magazine assigned to the Defense Media Activity - San Antonio.

On my most recent assignment, I found myself somehow sitting in the pilot seat of NASA's Small Pressurized Rover, or SPR, – a space vehicle, which astronauts will drive on the moon when they return there in a few years.

The brightly lit touch-screen displays glowed warmly on the panel in front of me. Mini cameras lacing the outside of the SPR gave me an instant 360 degree view. As my callused fingers wrapped around the smooth grips of the pilot controls, things just seemed to fade away ... and I was, once again, a mop-haired 7-year-old sitting on the front porch steps with a cardboard ray gun in my cowboy holster.

I could almost hear, "Psst, Moon Truck 1 to base. Ready for moon mission. Psst."

Then the SPR lurched forward like a bronco out of the chute. A grin split my face from ear to ear; I was driving on the moon. The SPR rolled forward at a steady pace of 1 to 2 miles per hour. I twisted the controls slightly and the rover slid sideways and drove in a crab-like crawl. I twisted back and she righted herself. I drove up to the parking lot curb, beside me sat the NASA technician whom I somehow forgot existed a few moments earlier, and engaged the six independent wheel bases, and the SPR "walked" up over the curb. We were off again.

If you ever get a chance to "drive on the moon," do it. I have, and I highly recommend it.

I guess I have been very fortunate.

I call it fortunate, not lucky — fortunate, because my Air Force career has enabled me to do these things that most people will never get a chance to do. I'm not saying the Air Force will make all

your dreams come true. But, an Air Force career does give us something very special — opportunity.



Inside the Orion crew vehicle, Staff Sgt. Matthew Rosine takes in his surroundings while on assignment at NASA's Johnson Space Center in Houston. America will send a new generation of explorers to the moon aboard NASA's Orion crew exploration vehicle.

As Airmen, we have so many opportunities. We have opportunities for education and training. We have opportunities for travel and expansion. We have opportunities to meet people from distant lands and lives far removed from our own.

My opportunities include having earned a bachelor's degree and my CCAF degree. I am the first-ever staff sergeant assigned as an editor at my dream job – *Airman* magazine. I've been to Alaska, Puerto Rico, Germany and Uzbekistan. I've had Iraqi citizens thank me for serving in their country, and I've seen with my own eyes why freedom is worth fighting for. I've also managed to relive a childhood dream or two.

If we look around, even on a bad day, as Airmen, we have a lot of great opportunities that we will never have anywhere else.

A few short days away from my departure for a Permanent Change of Station, I realized that by the time this issue of *Airman* hits dayrooms and MPFs, I will have already blasted off into a new uncharted and unknown adventure far from the dusty southern San Antonio landscape my wife and I are raising our children in today. I'm a bit nervous and excited, because it means more opportunities are waiting out there. My family and I intend to accept and embrace these opportunities.

Life is what you make of it, friend. Take advantage of the opportunities we have as members of the greatest Air Force the world has ever seen. Give it a try and who knows, maybe you might go above and beyond ... planet Earth.

Matthew S Rosine



"PRIDE"

ASIAN PACIFIC AMERICAN
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PFRM

3

C-400

THE FINAL FRAME



WARRIOR CARE | photo by LT. COL. TYOSHI TUNG
 Sick and wounded troops are taken from a specialized transport vehicle onto a KC-135 Stratotanker at Bagram Airfield, Afghanistan. The KC-135 was manned by members of the 931st Air Refueling Group who volunteered for a 12-day aeromedical evacuation mission that included four trips from Germany to Afghanistan. The 931st is an Air Force Reserve unit at McConnell Air Force Base, Kan.

Airman

3

4