

NOT FOR PUBLICATION  
UNTIL RELEASED BY THE  
HOUSE ARMED SERVICES  
COMMITTEE STRATEGIC  
FORCES SUBCOMMITTEE

**STATEMENT OF**

**LIEUTENANT GENERAL FRANK G. KLOTZ**

**COMMANDER, AIR FORCE SPACE COMMAND**

**BEFORE THE**

**HOUSE ARMED SERVICES COMMITTEE**

**STRATEGIC FORCES SUBCOMMITTEE**

**UNITED STATES HOUSE OF REPRESENTATIVES**

**ON**

**MARCH 16, 2006**

NOT FOR PUBLICATION  
UNTIL RELEASED BY THE  
HOUSE ARMED SERVICES  
COMMITTEE STRATEGIC  
FORCES SUBCOMMITTEE

## INTRODUCTION

Mr. Chairman and distinguished members of the subcommittee, it's a great privilege and an honor to appear before you today to represent the nearly 40,000 men and women of Air Force Space Command (AFSPC), stationed around the world, standing watch 24 hours a day, 7 days a week, 365 days a year. At this moment, this fully-integrated team of Active Duty, Reserve, Guard, government civilians and contractors are delivering space effects to joint warfighters, as well as civil and commercial customers. They accomplish this by planning, operating, maintaining, securing and supporting our Nation's Minuteman III Intercontinental Ballistic Missile force; flying our communications, early warning, weather, and precision, navigation and timing satellites; monitoring the ground-based radars and other sensors that provide early warning, and locate and track thousands of objects in space; assembling and launching boosters and maintaining the ranges for the launch of satellites; and, developing and acquiring the next generation of space and missile systems to help ensure America's strategic, commercial, and scientific advantages in space well into the future.

Along with their colleagues in the National Reconnaissance Office (NRO) and across the entire National Security Space (NSS) enterprise, the men and women of Air Force Space Command represent the best and brightest of our Nation's sons and daughters, and we have every reason to be proud of them and of their service to our country.

Today, we will recap some of the significant accomplishments and milestones from the past year, as well as address Air Force Space Command's vision and strategic

priorities for the future. In addition, we will offer some perspective on the Quadrennial Defense Review as it pertains to space and missiles. The bottom line is that success in building space capabilities directly translates into success on the battlefield, reduces collateral damage, saves lives, and protects our Nation's advantages and critical infrastructure in space.

### **THE YEAR IN REVIEW**

We have witnessed several key milestones and made significant progress since this committee last met to discuss our Nation's space posture. Over the course of the past year, we have enhanced the Nation's security by ensuring space superiority and providing joint space combat effects for our forces, maintained a safe and secure strategic deterrent, and provided assured access to space for a myriad of users.

Yet 2005 was also a year tinged with some sadness for the space enterprise. On June 20<sup>th</sup>, 2005, we lost a great leader when General "Bennie" Schriever, the "father of space and missiles," passed away. Throughout the Cold War, his was one of the most articulate and effective voices advocating for the space and missile capabilities we now take for granted. Like so many other pioneers, he was often chastised for his outspokenness. Time, of course, has proven General Schriever to be right and his contributions vital to our national security. While General Schriever and other visionary leaders are no longer with us, their spirit of service and determination lives on. We succeed because our space warriors, like my predecessor General Lance W. Lord, are the best at what they do. They secure our homeland, make joint warfighters more

combat effective, and provide national decision-makers with the information they need to ensure our security and prosperity.

To better understand what this progress has meant, I would like to briefly highlight some of our recent accomplishments.

### **Joint Space Combat Effects**

The establishment of the Joint Space Operations Center (JSpOC) at Vandenberg AFB, California has ushered in a new era in providing space combat effects to joint warfighters around the world. For the first time, space assets are commanded and controlled by a single entity. In essence, the JSpOC serves as a one-stop shop for all of our DoD space capabilities by integrating joint-space assets. It improves U.S. and Allied warfighting capabilities by providing a shared situation awareness to commanders of air, land and sea forces across all levels of conflict--strategic, operational, and tactical.

Additionally, we have matured our Director of Space Forces concept and made it a vital part of the forward-deployed CENTCOM leadership team. Our presence and direct support of theater forces have made a difference. The result is Combatant Commanders now have access to more responsive, tailored space capabilities than ever before. However, this is just a first step. To further advance our ability to fully support theater commanders, we are pursuing a Space Command and Control architecture to build a fully interdependent, net-centric, robust space presence that meets future warfighter demands.

We currently have the most capable Global Positioning System (GPS) constellation in history. Position, navigation and timing provided by GPS continues to transform the battlefield and turbo-charge global commerce. We continue to see this first-hand in our ability to strike targets with unprecedented precision and in our ability to rescue downed aircrew. Our Air Force Chief of Staff, General Moseley, emphasized the consequences of not having GPS-aided combat search and rescue when he stated, “If you float down into that world...they will kill you.” GPS provides the positioning information that allows rescues to occur in minutes versus hours or days. In short, space takes the “search” out of “search and rescue” and saves lives, each and every day. In 2005, we reached an historic milestone as the 18,000<sup>th</sup> person, world-wide, was rescued with the assistance of satellite-aided search and rescue. The successful launch and initialization of the GPS IIR-M satellite was yet another historic milestone, which will ultimately supply new military and civil capabilities to people around the world. It will provide a significant improvement in information assurance and more protected signal than the current constellation. These new capabilities further solidify our position as the preeminent provider of position, navigation and timing data with real, highly-capable satellites already on orbit.

Our meteorological, space warning and MILSATCOM capabilities are surpassing expectations every day. Whether providing real-time forecast updates via the Defense Meteorological Satellite Program (DMSP), ensuring constant missile warning “top cover” with the Defense Support Program (DSP), or delivering the vital command and control capabilities using our Milstar and Defense Satellite Communications System (DSCS) we are making our deployed forces more combat effective. We have engineered methods

to leverage each of these systems in ways never imagined during their inception and original development, while aggressively managing our on-orbit assets so they exceed their expected life spans by considerable margins.

In addition to supporting the joint warfighter, we proved the importance of space to the security of our homeland. Following Hurricanes Katrina and Rita, space capabilities were the lifeline to many in the devastated Gulf Coast region. Weather, navigation, communications and satellite imagery were just a few of the capabilities we provided. Along with my predecessor, General Lord, I had the opportunity to visit the region and was taken aback by the devastation. Simply put, Hurricane Katrina was as powerful as any man-made weapon of mass destruction. However, in the midst of the destruction we witnessed the qualities that make our Air Force so great. We deployed nearly 200 space professionals and eight helicopters to the region to assist local communities with medical evacuations and the safeguarding of resources.

These helicopters, by the way, are assigned to our missile wings to help protect and defend our nuclear resources. While they routinely perform search and rescue missions in the surrounding communities, the hurricane relief operations last fall represented the first time in history we have assembled them as an expeditionary squadron, and employed them as a “package” halfway across the country. As we debate the importance of replacing Air Force Space Command’s aging UH-1N “Huey” fleet, we must bear in mind that these helicopters will have a value to the Nation beyond their critical nuclear security mission.

We also deployed the first-ever Director of Space Forces in the Continental United States to support Joint Task Forces Katrina and Rita. The Global Broadcast

System (GBS) Joint Program Office (JPO) moved a Theater Injection Point (TIP) and 10 Receive Suites (RS) to Mississippi and New Orleans to support relief operations. GBS operations disseminated video of areas affected and were used to identify rescue locations, assess infrastructure damage and restore essential communication capabilities. The lessons we learned have been instrumental in shaping the way we operate. Specifically, we are becoming more fully integrated into homeland security exercises and plans.

While many of our space superiority achievements fall necessarily in the classified realm, we have achieved several unclassified milestones. We gained Air Force Requirements for Operational Capabilities Council approval for the Counter Communication System Block 20 Capability Development Document, which will serve as a critical step in securing our Nation's space assets. The 527<sup>th</sup> Space Aggressor Squadron from Schriever AFB Colorado was instrumental in training warfighters to recognize and operate in GPS and SATCOM-denied environments, as well as conducting vulnerability assessments using commercially available imagery and information. These efforts are serving as a guide for many of the key technology challenges we face in this important mission area.

### **Strategic Deterrence**

Today, the importance of our Strategic Deterrence capability has never been clearer. As our Chief, General Moseley says, "Our ICBMs are the backstop for the Nation." He is right on target when you consider our Nation has never been attacked

with a weapon of mass destruction despite various threats over the decades. In my mind, it's because our ICBM warriors, along with their bomber and submarine colleagues still stand their silent vigil.

The size and composition of our ICBM force continues to evolve in response to the changing strategic environment. Following the signing and ratification of the Moscow Treaty, Air Force Space Command began the process of deactivating the Nation's 50 Peacekeeper missiles in October 2002. In September of last year, we removed the last Peacekeeper missile from its launch facility, ending a proud chapter in the history of our ICBM fleet. For two decades, the men and women of Peacekeeper answered the call and delivered mission success. What is equally impressive, in my mind, is that we accomplished this three-year deactivation without a single security breach or safety mishap--a tribute to the skill and dedication of the young Airmen who performed this complex and arduous undertaking.

Even though we've deactivated the Peacekeeper missile, the ICBM continues to be an integral part of our Nation's strategic deterrent. For this reason, Air Force Space Command is committed to ensuring the Minuteman III ICBM remains an effective and viable weapon system through the year 2020. We recently completed installation of the Minuteman Minimum Essential Emergency Communications Network throughout 20<sup>th</sup> Air Force. This upgrade greatly enhances the communications links to our strategic forces. Additionally, thanks to the strong support of this subcommittee and Congress, we have continued to make steady progress on the Propulsion Replacement Program and Guidance Replacement Program, and to begin refurbishment of the Propulsion System Rocket Engine. We also stayed on track to field the Rapid Execution and



Combat Targeting Service Life Extension Program, beginning in 2006, to sustain our Launch Control Centers. We also conducted three successful test launches of the Safety Enhanced Re-entry Vehicle (SERV), which will allow us to deploy the warhead used on the deactivated Peacekeeper ICBM on a portion of the Minuteman III fleet. Finally, we completed our work on the Analysis of Alternatives for Land Based Strategic Deterrent, recommending an evolutionary approach to the replacement of the Minuteman III capability.

The opening of AFSPC's first-ever Nuclear and Space Security Tactics Training Center at Camp Guernsey, Wyoming, provides our security force warriors, maintainers and operators a much needed place to exercise their combat skills. For the first time, our front line of defense is receiving the "graduate-level" weapons and security tactics training to defend our nuclear and space assets, as well as properly preparing for deployment with our Air Expeditionary Forces. This Center also witnessed an important step forward in forging closer US-Russian relations. Following an agreement between Presidents Bush and Putin in February 2005 to enhance cooperation between our two countries in nuclear security, a 12-person Russian delegation, led by General-Lieutenant Vladimir Verkhovtsev, visited Camp Guernsey to participate in Air Force Space Command's annual Road Warrior nuclear convoy security exercise. Together, we are learning from each other's best practices and improving security for both Nations. Finally, it's important to note, this facility would not have been possible without the close cooperation of the Wyoming National Guard. Their assistance significantly reduced the cost to the Air Force, provided access to state-of-the-art firing ranges, and permitted training to start in the first year of inception.

## **Assured Access to Space**

Our launch teams, composed of managers and engineers from the Space and Missile Systems Center, and launch and range operations maintenance experts on both coasts, have truly delivered on the challenge to work towards cost-effective assured access to space. In the launch business, there is nothing more costly than failure as evidenced by the multiple launch mishaps we experienced in the decade of the 90s. However, in 2005 our launch professionals showed the world we have turned the corner.

In the spring, we launched our final Titan IV from the east coast. On October 19<sup>th</sup>, we closed the book on Titan from Vandenberg AFB, California. Including all of our launch systems, that was our 44<sup>th</sup> consecutive successful launch, which broke the previous launch record set in 1971. Our new Evolved Expendable Launch Vehicle is also off to a superb start, and now has 11 successful missions out of 11 launches. Based on historical launch failure rates of 1 in 10, the cumulative launch success accomplishment represents a very significant cost avoidance for the American taxpayer.

As we look to the future, we are examining the ability to use smaller, lower cost satellites that could be employed rapidly in response to the needs of our Combatant Commanders requirements. In concert with these efforts, we should also develop smaller payloads that leverage advanced technologies. Initiatives like the Tactical Satellite or “TacSat,” when combined with traditional satellite constellations may help us move beyond our preconceptions and break through existing paradigms.

## 2006 PRIORITIES

This year, we remain committed to our vision to become **“A Full-Spectrum Space Combat Command Preeminent in the Application of Space Power for National Security and Joint Warfare.”** We have also adjusted our strategic priorities slightly to emphasize a few key areas: the importance of securing the space domain, strategic deterrence, space acquisition, as well as the development and quality of life for our people. However, our focus remains laser sharp. We will continue to deliver on our promise to be the world's greatest space and missile force by championing four strategic priorities:

1. Secure the Space Domain and Provide Space Combat Effects to Joint Warfighters
2. Maintain a Safe and Secure Strategic Deterrent and Pursue New Triad Capability for the U.S. and its Allies
3. Make Space Acquisition the DoD Model for Acquisition Excellence
4. Provide World-Class Professional Development and Quality of Life Opportunities for our People

These priorities not only are the right direction for Air Force Space Command, but they are also in line with the priorities of General James E. Cartwright, the Commander of United States Strategic Command, as well as Air Force priorities laid out by our Secretary of the Air Force, The Honorable Michael W. Wynne and our Chief of Staff, General T. Michael Moseley. Now, more than ever, it is critical for us to act in concert and be good stewards of the taxpayer's money.

## **Priority #1: Secure the Space Domain and Provide Space Combat Effects to Joint Warfighters**

Supporting the joint warfighter is at the heart of everything we do in Air Force Space Command. The asymmetric advantage space provides is a critical lifeline to those who are in harm's way each and every day. For that reason, it is more important than ever to maintain our technological advantage.

While it is true our on-orbit space systems have outperformed our expectations, it is equally true they will not last forever. We are at a crossroads in providing space combat effects to the joint warfighter. As the average age of our constellations reaches and exceeds their design life we must maintain our commitment to next generation systems.

The Defense Meteorological Satellite Program (DMSP), which was so instrumental in warning the Gulf Coast during this past hurricane season and during Operations IRAQI FREEDOM and ENDURING FREEDOM, is exceeding its design life. The satellites in the DMSP constellation were engineered to stay on orbit for 48 months. The current average satellite in the operational constellation has been on orbit for more than 56 months. While on one hand this represents an enormous technological and engineering achievement, it is also worrisome to those who depend on its capabilities. DMSP is capable of meeting current needs, but there is an urgent requirement for more robust data. The customers of DMSP are counting on our ability to deliver the next generation of systems, like the National Polar-orbiting Operational Environmental Satellite System (NPOESS).

NPOESS will provide higher resolution and increased data availability to the warfighter over the current DMSP constellation. For the warfighter, this means we are better able to provide advance warning of adverse weather conditions and more decisively take the fight to the enemy. Here at home, NPOESS and similar capabilities are the first line of defense against natural disasters like Hurricane Katrina. As forecasting accuracy dramatically improves, our federal, state and local responders will gain valuable time to deploy limited resources. NPOESS will be a life-saver both here and abroad.

Our Defense Support Program (DSP) constellation is providing unparalleled strategic and tactical missile warning. It is our first line of defense against a surprise attack both on the battlefield abroad and here in our homeland. When DSP was designed, its capabilities were focused on strategic warning. Today, it does that and so much more by performing functions well beyond its design specifications. Our DSP constellation is exceeding its design life and getting older. Now more than ever, it is imperative we deliver on the Space-Based Infrared Satellite System (SBIRS).

The potential impact of SBIRS is simple to explain. At the start of Operation IRAQI FREEDOM, our ground troops charged across the Kuwaiti border towards Baghdad. During that charge, the Iraqi Army attempts to repel our ground forces many times came in the form of rocket attacks. Existing capabilities allowed us to determine the general area where an attack originated, but did not provide data with enough accuracy for our forces to immediately neutralize the threats. With SBIRS, our forces will know precisely where the enemy is after the first salvo. This level of precision will allow us to silence a hostile force before they can take a second, third or fourth shot.

Thousands of joint warfighters are currently relying on the Defense Satellite Communications System (DSCS). This constellation has also exceeded all expectations and like other satellite constellations, it is getting older by the day. The average age of a satellite in this constellation is over eight years--it was designed to operate for 10 years.

The follow-on Wideband Gapfiller System (WGS) will give our warfighters needed increases in bandwidth and the ability to move towards a highly mobile, fully integrated force. WGS is scheduled to begin replacing the DSCS constellation in 2007. Amazingly, every WGS satellite launched will have more throughput capability than the entire DSCS constellation currently on orbit. Every WGS launch will literally mean an entire new constellation in terms of capability provided to the warfighter.

Even the relatively young Milstar constellation will soon reach its design life. The average age of our current Milstar satellites is nearly seven years and it too was designed with a 10-year life expectancy. Our special operations forces have come to rely heavily on the unique communications capabilities currently provided by Milstar, which has been key to shrinking the "kill chain" from days and hours to literally minutes. Development of the Advanced Extremely High Frequency (AEHF) satellite will guarantee we continue to provide protected, survivable, anti-scintillation, anti-jam, low probability of intercept communications.

The Transformational Satellite (TSAT) constellation is the next step after WGS and AEHF. It will enable "communications on the move" and will transform the Services' net-centric architectures including the Army's Future Combat System, the Navy's ForceNet, the Marine Corps' X-Net concept and the Air Force's Global

Information Grid initiative. Without TSAT these Service programs and the capabilities become less effective--TSAT is in integral part of the concept of operations.

Without a doubt, information is one of the vital keys to our mission success. Our future satellite communication systems will continue to revolutionize how we fight. An 8"X10" image takes 2 minutes to transmit over Milstar, but will take just 24 seconds with AEHF. With TSAT, the same image will be transmitted in less than 1 second.

A UAV image, which used to take up to 12 minutes to send via Milstar, will be sent in less than 1 second with TSAT. AEHF will be capable of transmitting the entire Air Tasking Order in approximately 1 second. This is the same Air Tasking Order that had to be flown via helicopter to command centers and aircraft carriers during Operation DESERT STORM.

When you are operating on the ground, or on the open seas, or at 35,000 feet, and repairs are needed, you can return to base, dock in port, or land at an airfield. The Hubble Space Telescope, which operates at a relatively low 320-333 miles can be repaired using manned space capabilities. However, when you operate at more than 22,000 miles, like our geosynchronous satellites do, there are no options. When the fuel runs out, there is no hope of gliding to a safe landing. When a primary component and its backup fail, you go with only a subset of the capability or sometimes without the entire spacecraft. The top-notch leaders of operations and sustainment programs are continually being asked to do more with less to keep the current aging constellations operational until follow-on systems can replace them. Funding cuts, along with fact-of-life satellite development slips, have delayed legacy satellite replacement systems.

This has forced Herculean efforts on ground-based constellation operations and

sustainment programs to keep these legacy systems operational well past their design life.

Current satellite systems are flying well beyond their engineered life cycles. This has enabled the Command some flexibility in programming and deployment to address budget cuts and development slips. Extending satellite life has required efforts such as power-management (turning power off to secondary payloads/capabilities), reduced station-keeping maneuvers (greatly increasing risk of losing primary capability if a satellite drifts), and reducing fuel budgets for end-of-life disposal.

Ground sustainment is key to successfully extending any satellite system's constellation life. Robust factory and on-site contractor support has ensured all aspects of operations are optimized, provided real-time anomaly analysis and recovery, ensured data and trending analysis for all phases of satellite life, and provided continuity and reach-back capabilities for each program. However, we can only do so much with the resources available.

As we are operating and maintaining our current systems, we are also bringing on new space systems that will provide our warfighters with the critical edge only these technically superior systems can. It is vital for us to overcome challenges in developing next generation systems and field transformational capabilities. The TSAT, SBIRS, WGS, NPOESS and AEHF constellations must remain our top priorities.

An additional capability that will pay dividends is the Space Radar system. Our strong partnership with the intelligence community will ensure Space Radar provides persistent, day and night, world-wide, all-weather, ISR capabilities for military,



intelligence, and civil applications. It will employ multi-mode radar to deliver a range of products, including high resolution images and terrain information, moving target indications, and ocean surveillance. The combined on-orbit and interdependent ground architecture will enable a transformational capability to hold our adversaries at risk.

Air Force Space Command remains committed to securing the space domain and protecting our asymmetric advantage. We have witnessed attempts to negate this advantage and understand the need to protect our space systems. Given the opportunity, our adversaries will attempt to exploit any and all weaknesses. Our primary focus in the endeavor is Space Situation Awareness (SSA). Our ability to thwart attacks against our space systems is dependent on our ability to know who is operating in the domain, what capabilities they possess and their intentions. Our current SSA capabilities are not adequate to counter future threats. We must take the necessary programmatic steps to ensure we know what each new spacecraft is capable of before it is in position to impact our support to the joint warfighter. Of course, SSA is just the first step in securing the space domain. We also continue to work towards systems that can protect our space assets and ensure the capabilities they provide are available for the joint warfighter.

One initiative that will enable us to better protect our systems and operate more closely with joint warfighters, is the integration of several of our aggressor units into the Air Force Warfare Center at Nellis AFB, Nevada. Organizational changes at the Space Innovation and Development Center (formerly the Space Warfare Center) and the Air Force Warfare Center will provide for enhanced training at exercises such as RED FLAG, BLUE FLAG and DESERT RESCUE. United States Central Command has

recognized the value of these capabilities and by-name requested space aggressors to identify vulnerabilities to Intelligence Surveillance Reconnaissance and SATCOM reach-back capabilities.

**Priority #2: Maintain a Safe and Secure Strategic Deterrent and Pursue New Triad Capability for the U.S. and its Allies**

Every day our Intercontinental Ballistic Missiles deliver the "non-kinetic effect" of Strategic Deterrence. Today and in the future, we are committed to safely and securely operating this valuable resource.

We continue to use an evolutionary, block development approach towards a new Land Based Strategic Deterrent (Minuteman IV). This effort reduces risk while at the same time ensures we can effectively sustain our strategic deterrent force.

Space Warriors are analyzing all options for developing and fielding a capability for Prompt Global Strike (PGS). As the QDR states, we are shifting from responding after a crisis starts (reactive) to preventative actions so problems do not become crises (proactive). We are also shifting from a "one size fits all" deterrence strategy to tailored deterrence for rogue powers, terrorist networks and near-term competitors. We simply do not have the ability to be in all places at all times. PGS would give us the ability to respond conventionally to the full range of contingencies--24 hours a day, 7 days a week, 365 days a year. That may mean we can strike a terrorist cell before they disperse to carry out an attack. In highly defended areas of the world it also has the potential of keeping our troops out of harm's way while at the same time allowing us to hold targets at risk.

The ICBM mission area further offers an opportunity for substantial cost savings with minimal investment. One out of every five uniformed members of Air Force Space Command is currently assigned to Security Forces. This requirement is driven largely by a traditional security architecture in our missile fields, which can and must be modernized. While it does the job, it may not be as efficient as it could be.

Technological upgrades to our missile fields could potentially reduce our footprint on the ground while at the same time increase the security of our ICBM fleet. The bottom line is to translate these potential manpower reductions into cost savings and greater security.

An often overlooked ingredient to our strategic deterrence is our early warning radar capability. These systems form the backbone of a robust National Ballistic Missile Defense. Our ability to intercept a hostile attack is dependent on our ability to first detect and precisely track an inbound warhead. Modernization efforts are a critical first line of defense, providing national-level decision-makers the time they need to formulate a response.

### **Priority #3: Make Space Acquisition the DoD Model for Acquisition Excellence**

There is no doubt, we have experienced many challenges in acquiring next generation space systems. In 2005, we laid the foundation for a solid future for space acquisition as we set out a marker for our acquisition efforts. We intend to be the DoD model for acquisition excellence. We are proud to report Lt Gen Mike Hamel and the Space and Missile Systems Center team have already charted our path and moved out

towards that goal. Our recipe is simple: (1) develop and inspire world-class **people**, (2) refine our **processes** for success, and (3) forge **partnerships** within the Command and across the DoD, Services, agencies, and industry.

As General Lord noted during his testimony on space acquisition to the House Armed Services Committee in July 2005, our major programs developed in the 1990s had multiple congenital defects. Addressing these acquisition challenges is critically important to the joint warfighter, and we in Air Force Space Command are committed to doing our part to ensure robust space capabilities are brought to the fight.

At the Space and Missile Systems Center, we are concentrating on realigning the organizational structure, rebuilding the space acquisition workforce and refining our development and program management processes. The steps we are taking will revolutionize our culture, processes and products.

In addition, we are committed to mitigating risk across the entire space portfolio. One of the key ingredients in this effort involves our “walk before you run” strategy. In the past, over-optimistic estimates of the maturity of key technologies and system complexity have led to failure. Our evolutionary, block development approach will enable us to gradually introduce new technology as it matures.

Another ingredient to our success lies in robust research and development (R&D) programs. As such, R&D is essential in our effort to reduce risk. We are also committed to close partnerships with the Defense Advanced Research Projects Agency, the Air Force Research Laboratory, the NRO, and the other Service R&D organizations so that we maximize the effect of R&D dollars across the National Security Space enterprise.

Space professionals are the building blocks of our acquisition efforts. We have worked hard with the Air Force Personnel Center to stabilize the acquisition team through four extensions to four years for most space acquisition personnel and have reorganized the Space and Missile Systems Center. These adjustments help ensure stability across the workforce, which is essential to enforcing accountability and ownership.

Winning this battle will also require us to break down existing stovepipes by horizontally integrating across the NSS enterprise. We are emphasizing lean, transparent processes with solid business ethics and a clear recognition integrity must always come first. A healthy relationship with industry is another essential ingredient. Towards this goal, we understand the need for honest dialogue on cost and for establishing realistic expectations of untested technologies.

Currently, we stand at a crossroads in our recovery efforts. We are not yet up to full speed, but we are making progress. As we move further into the second half century of space, it will be vital to incorporate the lessons learned from our many hard fought battles, but not be paralyzed by past mistakes. We are working hard to restore credibility in our acquisition processes. The challenge for space professionals across all Services will be to maintain the initiative and patience to see these efforts through to the end.

Over 45 years ago, the developers of our Nation's first photo reconnaissance satellite, CORONA, demonstrated the kind of persistence necessary to fielding cutting-edge and ultimately strategically decisive space capabilities in the face of technical and budgetary challenges. The combined AF-NRO development team did not back down,

even after the first 12 satellites were destroyed during launch or failed after reaching orbit. Success didn't happen until the 13<sup>th</sup> launch! Imagine where we would be today if they had quit after the 1<sup>st</sup> failure, or the 5<sup>th</sup>, or the 12<sup>th</sup>?

In the coming months and years, we will begin to see small achievements build momentum towards greater acquisition successes and accomplishments. While this is truly amazing, it is in no way as important as our people. Without trained, equipped and motivated people, the most advanced space weapon systems are worthless.

**Priority #4: Provide World-Class Professional Development and Quality of Life Opportunities for our People**

The last 12 months have seen us make great strides in our Space Professional Development initiative. We graduated the first two classes of Space 300 (Advanced Space Professional Development) students and in doing so rounded out our continuum of space education. The development of our SMC Acquisition School has us postured to develop future acquisition leaders. The Space Education Consortium, led by the University of Colorado at Colorado Springs, is poised to produce tailored programs to further enhance the knowledge of our space professionals. The detailed inventory of our space professionals has enabled us to reshape the assignments process--matching the right person to the right job to deliver mission success. In November, we pinned on the first new space badges, which are a powerful symbol of how we are forging the Air Force Space Command of the future. We are postured for one goal--delivering space combat effects to the joint warfighter and for the Nation.

One of the keys to our success has been our Total Force approach to accomplishing our space and missile missions. By striving to operate as one team--

Active Duty, Reserve, Guard, civilians and contractors--we continue to achieve success with increasingly complex space missions. We take great pride at Air Force Space Command in being regarded as one of the leaders in the DoD due to how we employ people in the development, acquisition and operation of our weapon systems. Our record of performance truly sets us apart. Our ability to leverage the Total Force will become even more vital as the Air Force faces various force shaping and downsizing challenges. Where it is smart to do so, we are putting the talent of our Reserve and Guard forces to work.

The NSS enterprise is also working together in unprecedented ways. Squadron and Group Commanders across AFSPC and the NRO are now selected and assigned by a single, combined board. Senior leaders from both organizations meet to decide what is best for individual development and what is best for the NSS enterprise as a whole.

Furthermore, we are in a better position than ever before to cross-flow space warriors between organizations. We are refining the requirements for each billet and have thoroughly categorized the expertise of each individual. This is allowing us to build the space professionals of the future...today.

Some barriers do still exist in our efforts to transform our workforce and our ability to acquire world-class systems. Everything we do in Air Force Space Command is joint. However, few positions within the Command carry a joint billet designation. To continue making tremendous strides in bringing space to joint operations, we must encourage our sister Services to provide high quality people to places like joint program

offices in SMC, the JSpOC, and the National Security Space Institute. We may want to consider joint duty credit for the appropriate positions as one way to achieve our goal.

Air Force Space Command is also unique in that we rely heavily on contractor expertise. Contractors represent 34 percent of the command's overall manpower and 25 percent of our total acquisition workforce. We leverage contractor expertise to fill our gaps in experience and technical expertise. We are working harder than ever to protect and limit these valuable national assets as we face increasing budget pressure.

Perhaps more than any other military command, we rely on contractor support as an integral part of our daily operations since they are imbedded in every Air Force Space Command function, from initial development and acquisition of future systems to our daily operations of space and missile systems. Our industry partners form an integral part of our ability to build and sustain a viable cadre of credentialed space professionals.

Finally, we have fully embraced the President's initiative to inspire young people to pursue careers in math, science and engineering. On February 10<sup>th</sup>, General Lord conducted the first lesson at Discovery Canyon Middle School in Colorado Springs as part of our new ***"High Frontier Adventures"*** K-12 educational outreach program. Our vision is to use our cadre of 10,000 Credentialed Space Professionals to partner with local schools and help grow our next generation of space leaders. Our future as a Nation, and especially our ability to leverage space effectively, depends on inspiring our young people. We in Air Force Space Command have the people, skills and desire to make a difference where we can by changing our Nation's math and science education culture...one student at a time.



## **QUADRENNIAL DEFENSE REVIEW**

The QDR, above all else, reflects a process of change as we build our vision and strategy for the future: “We have set about making U.S. forces more agile and more expeditionary. Technological advances, including dramatic improvements in information management and precision weaponry, have allowed our military to generate considerably more combat capability with the same or, in some cases, fewer numbers of weapons platforms and with lower levels of manning.” This statement speaks directly to the power of space.

It is imperative for us to realize space is a critical enabler and force integrator across the breadth of joint operations. Space is at the core of our transformational efforts to become an interdependent force. Capabilities resident in the Army’s Future Combat System, the Navy’s DDX, or the Air Force’s Fifth Generation Fighters only reach their maximum effectiveness when they operate as part of a larger network of systems.

Towards this end, the Air Force has begun examining ways to achieve transformational results and become more interdependent. We are moving our Air Force from scheduled air operations to on-call air operations. Next generation satellite communication systems like AEHF, TSAT, and enhanced precision, navigation, and timing with GPS III form the foundation to this transformation.

The success of our air, land and sea forces will depend on our ability to go beyond intelligence handling to intelligence distribution. Furthermore, we will see less reliance on service-centric platforms as we transition to more interdependent capabilities. This will

enable US and Allied forces to achieve truly integrated combat effects. The warfighting capabilities we see as essential to our success on future battlefields are wholly dependent on robust space combat effects. If we are going to “find, fix, and finish,” space must be integrated into all aspects of the battle plan--today, tomorrow, and well into the foreseeable future.

The first Navstar GPS satellite launched on February 22<sup>nd</sup>, 1978 offers us a tremendous example. Today, US and Allied warfighters rely on our GPS capabilities in every phase of war and at every echelon, from Combatant Commanders to young privates on patrol. They expect and rely on GPS just as if they were flipping on a light switch. However, it took us more than two decades to reach the level of precision and robust operations we saw in Operations ENDURING FREEDOM and IRAQI FREEDOM. Back in 1978, only a select few envisioned how a space-based capability like GPS would transform the world. To achieve similar transformations we must act now. We are confident the capabilities offered by our next generation space systems will transform modern combat in the same way GPS has today. Our challenge is to remain patient and determined to see these changes through and to make it happen.

The nearly 40,000 men and women of Air Force Space Command have the vision to see the future and the determination to deliver. I am confident that with your help we can and will continue to transform the modern battlefield...not for our sake, but for the sake of America's sons and daughters we call soldiers, sailors, airmen, and Marines.