

NOT FOR PUBLICATION UNTIL RELEASED BY THE
HOUSE ARMED SERVICES COMMITTEE
SUBCOMMITTEE ON STRATEGICFORCES

DEPARTMENT OF THE AIR FORCE

PRESENTATION TO THE HOUSE ARMED SERVICES COMMITTEE
SUBCOMMITTEE ON STRATEGIC FORCES
UNITED STATES HOUSE OF REPRESENTATIVES

SUBJECT: SPACE ACQUISITION

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Introduction

Mr. Chairman, Congressman Reyes, and the distinguished members of the Committee, it is my distinct honor and privilege to appear again before you today and represent the almost 40,000 space and missile professionals in Air Force Space Command. It is also a pleasure to join such a distinguished panel; Mr. Tom Young, Dr. Pete Rustan, and Mr. Bob Levin. I appreciate their hard work and their determination to take space acquisitions to the next level of excellence.

I am proud to have Lt Gen Mike Hamel in attendance. We tapped him to lead the Space and Missile Systems Center because he has the skill set required to get the job done right. I have been impressed with his visionary leadership demonstrated throughout his exemplary career and I am excited to see what he will deliver.

I plan on taking full advantage of this opportunity to discuss the vital topic of space acquisitions and share with the committee, my thoughts on the way ahead. As we are all aware, a sound acquisition program is fundamental to our success as an Air Force. It is my hope that the questions you raise in this forum and the dialogue we have generated will help to improve our processes and ultimately our support to the joint warfighter.

In warfighting circles we talk about Find, Fix, Track, Target, Engage, and Assess. The same methodology must be brought to bear in the acquisition arena as well. We must find the problem areas by actively seeking them out. Many times we can proactively discover potential issues before they become problems. Fix actions must then be devised by our brightest minds. We track by engineering the necessary corrective processes and solutions. We target by zeroing in on the effects we want to

achieve. Finally, we engage the solution and assess the results for possible future actions.

At the core it is about establishing a warfighting mentality in everything we do. It is about attacking our weaknesses with the same ferocity and energy we employ on the battlefield. It is a two-pronged effort. Risk mitigation is needed to address our deficiencies in the short-term. By fully understanding how space diverges from our air-breathing counterparts and understanding our weak areas we can eliminate much of the risk. The second part of the solution is developing a long-term strategy. Today's junior officers, enlisted personnel and even officer candidates must be prepared and vectored for future success. I am proud to report that we are making progress in our battle.

Risk Mitigation

My testimony today will hopefully shed some light on the uniqueness of the space business and the challenges we face. Understanding the framework, or construct in which we operate allows us to better make decisions to improve the process.

National Security Space Acquisition Policy (NSSP) 03-01 (27 Dec 04) was a major step forward toward that end. As the Young Panel so eloquently stated, cost had replaced mission success as the critical factor. The space acquisition models had produced unrealistic cost estimates, resulting in unexecutable programs. NSSP 03-01 confirmed that indeed mission success should be our first guiding principle. Without question, the overarching framework of mission success sets us up much better to overcome current and future challenges.

For Space, the challenge is gaining control of the acquisition process early on in the program's life cycle. NSSP 03-01 defines several key Milestone Decision Authority (MDA) timelines that do just this. MDA program reviews were moved earlier in the program timeline, aligning them with the system readiness, system design, preliminary design, and critical design reviews. These crucial changes provide the most comprehensive information possible at the earliest opportunity, and allow the decision makers visibility at key decision points in the acquisition cycle.

Typically, less than a third of life cycle program costs across the Department of Defense are front-loaded. Satellite Systems and Ground Station Systems are different from this typical DoD program profile because the number of systems built is so few. For the typical DoD program, the Milestone C Low Rate Initial Production (LRIP) decision is very important because it produces the initial Operational Test & Evaluation (OT&E) items, and verifies the production and manufacturing tools are correct by manufacturing a small number of end article items before committing to the Full-Rate Production decision for what is usually a production run amounting to hundreds of items. Satellite systems are usually bought in very small quantities of three to five satellites or less for the total buy. Even the 24 satellite (nominal) GPS constellation is small in terms of production numbers when compared to typical production runs of aircraft, tanks and other DoD weapon systems.

In addition, unlike "typical" major DoD acquisitions, a satellite system usually does not have an acquisition phase dedicated to the creation and testing of two or more on-orbit prototypes by which to base the selection of a winner for the production contract. This is due to the current expense of space environmental testing and space

launch costs. Instead of a “fly-off”, the down select between satellite system contractors usually occurs during Phase B by having a “design-off”.

Once again, these differences tend to cause the life cycle cost curve for a satellite system to be highly front-loaded. For us the challenge is controlling costs from the start. We recognize that the necessary front-loading in space acquisitions has the potential to create significant cost overruns even before a program gets off the ground. Once this occurs, we are left with few good options. Cutting spacecraft from the production line cannot occur in the same way we cut aircraft without a significant reduction in capabilities. Typically, the most feasible option is to delay production and system availability to the joint warfighter. However, this is not without adverse budgetary impacts and capability gaps.

NSSP 03-01 further established a Defense Space Acquisition Board (DSAB) to act as a single decision-maker in an open and inclusive process relying on the use of Independent Program Assessments (IPA). Our goal is to gain as much insight into the process as possible. The IPA and other similar processes perform a valuable function as we begin to rebuild the core competencies within the acquisitions community. In the long-term we will have the organic expertise needed to ensure acquisitions success. However, in the short-term we will assume nothing and verify everything.

The best friend of any acquisition program is a stable baseline. Stability is dramatically increased when we accurately and completely assess progress at each and every key decision point. Systems in the pipeline along with next generation systems will benefit from this urgent and compelling needs process. The structured

review process ensures new requirements are critical, affordable, and achievable by soliciting the input of stakeholders.

As the committee is aware, technology is an important part of what we do in space. Perhaps no other community is more impacted by technological developments. Frankly, there were instances in the past where we assumed too much. However, that picture is in the rear view mirror. I'm concerned with what I see looking out the front windshield. NSSP 03-01 has levied appropriate requirements on our use of technology. It has tied the maturity of technology and testing in a relevant environment to key decision points. Blindly assuming a technology will catch up with the rest of a program prior to production is simply not an approach that makes sense.

Clearly NSSP 03-01 has us pointed in the right direction. We have implemented many of the reforms but this still is an evolutionary process. Increased awareness and command emphasis will help to mitigate risk in the short run. Long-term adjustments will require significantly more time and effort. Changes to the organization, culture, and communication are essential but the full results will not be immediately realized. These are the changes that will institutionalize our near-term fixes so that future generations do not have to revisit the same landscape.

One of the best ways for us to maximize resources and to bridge capability gaps is to make the most of our current assets. Our space professionals across the community have led an extraordinary effort to innovate new procedures for extending the life of our satellite constellations.

Our Space Professionals at Schriever Air Force Base recently shut down a Defense Satellite Communications System (DSCS) III satellite after 16 years of on-orbit

operations. That is significant because the design life was only 10 years. While we cannot do this with every satellite and every satellite subsystem, it is still a major achievement. The extraordinary efforts to conserve spacecraft fuel and payload capabilities are paying dividends. It took an entire team effort from our operators, scientists, and engineers. The lessons we are learning on orbit are used by our acquirers to shape future requirements and programs.

Success Stories

I fully understand any skepticism with regards to our way ahead. We need to gain the confidence of Congress and of this distinguished committee. In the 1990's we experienced some significant setbacks in the space launch business. The shock wave of those setbacks is still being felt today. We witnessed space launch failures that totaled more than \$11 Billion. In present day numbers that adds up to just about the entire annual Air Force Space Command budget. Losing an entire year's budget would obviously be a catastrophic event but that's what happened during this period.

More important though was the loss in capabilities to the warfighter and the diminished opportunities for research and development. As I said, those ramifications are still felt today. Following the Cold War, the acquisition gaps did not seem so dramatic. Now that we are at war those gaps cannot be tolerated. There was a time when some people said that failure was just the cost of doing business. Space launch and the space business in general were inherently risky. Unfortunately, we had a number of people throughout the business saying that about many different programs and that type of attitude did nothing but foster failure. Thankfully, not everyone felt that way. We buckled down as a team and corrected our mistakes. The results speak for

themselves. We are currently experiencing the most successful space launch era in the history of military space flight.

A key element in this turn around was the focus of leadership. We were able to provide the proper oversight and make the necessary modifications. The same holds true regarding present day programs. Leadership can only influence the process where it is allowed to do so. Each barrier between organizations has the potential of retarding the system. The consolidation of Air Force space assets under one command and the recognition of the Air Force as the executive agent for space has been a tremendous move forward for the space community. Of course there is more integration to do and we continue to look for ways to benefit from the synergy created as a result of such efforts.

This is not a new path for us though. Recently, we in the space community lost one of our heroes. On 20 June 2005, the father of space and missiles, General Bennie Schriever, passed on. He was an inspiration to us all and a true pioneer who blazed many new trails in the 1950s and 1960s. General Schriever took great personal pride that, in the many years of dealing with industry, not one official protest was lodged concerning the irregularity in selecting contractors for the ballistic missile program. He was a model for integrity in everything he did. From a dead stop in 1957, he energized the nation's ballistic missile programs and within five years had Minuteman missiles in their silos. By the end of the 1960s the number of Minuteman missiles on alert was into the thousands. Our Nation needed results then and it certainly needs them today and into the future.

I am pleased to report our on-orbit systems are delivering those results. We have the most robust precision, navigation, and timing capabilities ever recorded. Our Global Positioning System (GPS) constellation currently has 28 operational satellites. That is four more than the required 24 spacecraft. As one Marine Corps officer from the 1st Marine Expeditionary Force, G2 stated, “We were given a mission, after seizing the eastern half of Baghdad, of advancing on both Tikrit and Kirkuk. That had not been part of the original mission planning. As such, we didn’t have information on the routes to either, as we’d been focused on the enemy operations in Baghdad. That’s where the space assets kicked in.”

Today our space professionals are taking the designed capabilities of systems like GPS and obtaining results no one ever thought possible. At the 2nd Space Operations Squadron, Schriever Air Force Base, Colorado, satellite operators are innovating tactics, techniques, and procedures that allow us to improve GPS accuracy by 17 percent on a temporary basis.

Lieutenant General James T. Conway, 1st Marine Expeditionary Force Commander, witnessed another space success story first hand. “A captured Iraqi Brigade Commander told of making an 80 mile forced march in order to position his tanks east of Baghdad. On the first night, in order to rest his troops he moved his tanks into palm groves. At 0200, during the worst sand storm in 20 years, under complete darkness and deep in palm groves, Marine Air began the systematic destruction of his tanks. When 30 had been destroyed by pinpoint bombing his troops then melted away. He told us, ‘I wanted to order them back – but knew that if I did, it meant certain death.’”

These types of success stories are not created over night. They took years of work by our acquisitions professionals, scientists, engineers, and operators.

I am pleased to report that our strategic deterrent is on solid ground and the missile warning system is also the healthiest it has ever been. The guidance replacement and propulsion programs are succeeding as evidenced by our 99.6% alert-rate for our ICBM fleet. Our space professionals have squeezed every bit of capability from our missile warning systems and continue to drive for more. It is truly a credit to the spirit and determination of our finest men and women, a spirit and determination that will overcome any challenge, even the hurdles of space acquisitions.

Innovative Solutions

One of the significant shifts in focus affecting the acquisitions community is our paradigm change to developing smaller, more responsive spacecraft to augment and enhance our strategic systems. The Force Application and Launch from the Continental United States (FALCON) program is one such example. A separate program, Falcon 1, is already slated for a fall launch in a demonstration of responsive capabilities. We are seeing a great deal of interest in these smaller programs by companies not normally able to design and build larger spacecraft. The influx of new ideas and energy is extremely positive. This influx will help us achieve the capabilities we need sooner and at the same time preserve the vital industrial base.

An added benefit of the Operationally Responsive Space (ORS) construct is the ability to test new technologies in a realistic environment at relatively lower costs. The design of these spacecraft and near space payloads will be inexpensive with relatively shorter life spans. Our desire is to incorporate the lessons learned across all of our

space programs to make evolutionary enhancements. ORS holds tremendous promise for the warfighter and for the entire space acquisitions community. We are working hard to capitalize on that promise.

Organizational and Cultural Change

At the very heart of our acquisition efforts is our push towards comprehensive, deliberate and individually-focused space professional development. As in any organization the people are the key to success. We are devoting tremendous resources to the training and professional development of our people. We will capitalize on that foundational development through individualized career plans, and it will pay off. The organization those people work in is equally important to their success. It is vital that the acquisition organization be structured in such a way as to provide the right mix of building block learning opportunities and leadership opportunities. Working hand in hand with these efforts is the need to establish an effective framework. I am pleased to report we have established such a framework by codifying our Air Force Space Command priorities. Finally, our efforts have led us to break long-standing paradigms and establish new programs and processes. Our work with Operationally Responsive Space and Joint Warfighter Space has us thinking anew about space capabilities and the combat effects we provide to the joint warfighter.

Space Professional Development

Our Space Professional Development efforts have come a long way. We continue to set the standard in the Department of Defense through a robust, proactive Space Professional Development Program (SPDP). We have seized the opportunity provided by the Space Commission and the Secretary of Defense's recommendations

to sharpen the focus of our processes. The already approved Space Professional Strategy identifies the framework by which we're going to improve the overall effectiveness of our community of Credentialed Space Professionals and Mission Support team through education, experience, and training initiatives.

The erosion, over time, of expertise throughout the command, especially in key acquisition disciplines, is of great importance. Our continued and future success in the space community depends on our ability to retain the proper personnel, develop them professionally, and organize them into cohesive and capable units.

We are well into the process of developing our new Credentialed Space Professional accessions, further seasoning our more experienced personnel and taking the steps to make the strategy permanent. As Army Chief of Staff, Peter Schoomaker says, "I want a whole team of Michael Jordan's who can play any position." SPDP is creating that team for us. Today Our Space Professional Development strategy consists of six major steps to success:

1. First, we are clearly identifying members of the Credentialed Space Professional Community and documenting their specific space-related experiences. It is impossible to develop future leaders without first deciding who makes up the population. It was tough work but we conducted a detailed analysis of the experience base of our personnel. One of the more difficult tasks was identifying the Credentialed Space Professional members out of the total population of Space Professionals. Today I can tell you the skill set breakdown for over 99% of our Credentialed Space Professionals, whether they are officer or enlisted, civilians, engineers, scientists,

program financial and procurement managers, satellite systems operators, ICBM crew members, or space system acquirers.

2. Second, we have successfully developed a core set of courses designed to educate all members of the Space Community, to augment and amplify Air Force-wide professional military education and further produce Credentialed Space Professionals more knowledgeable on the domain of Space. Space 100 is designed to provide an introduction to space fundamentals, missions, acquisition and joint warfighting. It is a seven-week course taught at Vandenberg AFB for all officer, enlisted and civilian accessions coming into the space operations and acquisition communities. We are putting about 400 students a year through this course after which we send them on to unit- and system-specific specialized training programs.

Space 200 is taught by the National Security Space Institute and is designed for Credentialed Space Professionals at the 8-10 year point of their careers. Here we take the next step by focusing on space acquisition, design, capabilities and vulnerabilities of national and foreign space and nuclear systems. Ultimately we need these professionals to be proficient in tactics and the integration of space in joint warfighting at the operational level. As you would expect, Space 300 is focused towards a more senior audience. These Credentialed Space Professionals will begin to train their sights on space requirements, doctrine, and policy at the strategic level of military operations. Additionally noteworthy about Space 200 and Space 300, these courses are attended by a multi-Service population of students: we educate US Army, US Navy and US Marine Corps space professionals as well.

Specialized courses are also coming on-line to provide more technical depth of our space systems in Missile Warning, Space Control, Nuclear Operations, Intelligence-Surveillance-Reconnaissance, Satellite Communications, and Spacelift.

In the acquisition pipeline, we have chartered the SMC Acquisition School (SAS). This is in response to the Space Commission Report, Young Panel recommendations, and concerns raised by many of the distinguished members of this committee. The curriculum supports existing Air Force Institute of Technology (AFIT) courses and is designed to be completely synergistic with evolving National Security Space Institute activities. These courses re-emphasize a solid systems engineering approach. At the Field Grade ranks we have taken advantage of the new paradigm with regards to Intermediate Developmental Education. Space warriors are now able to obtain advanced academic degrees vital to space operations and acquisitions success. Through our “identification” phase of Credentialed Space Professionals, we have been able to send the right people to these space education—and job-performance enhancing—programs at the right time in their careers, while creating a robust inventory of Credentialed Space Professionals, from which we can then select to fill key leadership positions.

The unique nature of space dictates we also educate personnel supporting space operations. In the summer of 2004, we began educating our intelligence, finance, contracting, weather, and maintenance personnel coming into the community for the first time. As you can see it is a total team effort.

3. The third step is the glue holding the construct together. Our three-tier Space Professional Certification Program measures the overall health of the Community

while it simultaneously sets the standard for education, training, and experience at the key points in each member's career. We must balance the shortfalls identified by the Space Commission and still meet the requirements of Force Development for the Air Force. While recognizing the need for the professional development of the space community, we also recognized that it could not be a "one size fits all" construct. Tailoring the process to the subtle differences of our Total Force is another prerequisite. I cannot imagine our flying colleagues developing Airmen without knowing specifics like types of aircraft flown or qualifications for different types of missions. We are now tracking the same types of data on our Community of Credentialed Space Professionals.

4. Fourth, we are combing through each and every possible Space billet across the Department of Defense and the National Reconnaissance Office to identify the appropriate skill set—the requirements—for those jobs. It is crucial for our assignment teams to fill job openings with the right people. It is crucial for the development of the member, crucial for that gaining organization, and crucial to the joint warfighter. By comparing the inventory of skills accrued by our Credentialed Space Professionals with the inventory of requirements by grade, by weapon system, and by other prerequisites, I can then be better prepared to shape, mold and develop the various elements of the Space Community, which brings us to the fifth step.

5. In my role as the Space Functional Authority I am singularly responsible for developing the Credentialed Space Professionals supporting the space missions and for providing space career planning guidance. This guidance is designed to help individuals map out their career goals and aspirations. Open and honest feedback

throughout the process enables individuals and leaders to track their progress and determine what is best for them and the needs of the Air Force.

6. Last but not least, an undertaking of this magnitude requires permanent management and oversight. The Space Professional Management Office in Colorado Springs, as part of the Air Force Space Command Headquarters team, performs that vital function.

Recently, we unveiled the new space badge in an effort to unite the Command's missions and specialties. It will be worn by both space and missile professionals who have mastered the skills necessary to help lead and shape our space and missile missions. The badge qualification process is rigorous, requiring our people to demonstrate performance. This is in addition to completing the required training programs. The Young Panel further highlighted the need for change and validated the path we have chosen. It found that, "government capabilities to lead and manage the acquisition process had seriously eroded." We are taking the steps to reverse that trend.

Leadership Opportunities

Merging our acquisitions and operations arms into one cohesive organization presented us with many challenges. One of those challenges was how to organize the command and how to provide the right leadership opportunities to the right people. We have carefully analyzed the structure of the Space and Missile Systems Center and will soon implement some dramatic improvements.

Air Force people understand the standard organizational structure. They understand the significance of wings, groups, and squadrons. They also understand

the significance of being entrusted with command in one of these organizations. When the new construct is unveiled we will have a wealth of top command positions that directly translate across the Air Force. This will certainly help the advancement of engineers, scientists, and acquisitions professionals and make them more competitive for senior leadership posts. Combined, we are potentially looking at nearly 40 group and squadron level command billets. Not only are we more likely to retain our best and brightest if we can provide them opportunities for career advancement and the challenge of command, but more importantly, through this organizational restructuring, we help them to be better able to support the warfighters for whom they design, produce and acquire Air Force materiel.

Air Force Space Command Priorities

Our entire effort is anchored by the priorities we set out at the beginning of 2005. Success requires a framework to execute against and that is just what we are doing. We continue to make progress towards each of our priorities.

1. Ensure Space Superiority and Provide Desired Combat Effects for Joint Warfighting.
2. Maintain a Safe and Secure Strategic Deterrent Capability and Provide Means for Prompt Global Strike.
3. Continue Our Efforts to Develop Cost-Effective Assured Access to Space.

The establishment of these priorities directly impacts the success of our acquisition programs. Each one of us is competing for a limited pool of resources. Priorities sharpen our focus on what is important and where we should devote our time and energy. For the first time, we have a framework to guide our decisions, when questions

regarding competing programs surface. Our priorities have standardized the discussion across the entire command.

Space Superiority and Providing Desired Combat Effects for Joint Warfighting

My top priority has been and will continue to be Space Superiority. Much has been written in the media on this topic and much has been overstated. The simple fact is we can no longer assume that threats are non-existent. It does not make sense to give our troops the best body armor, up-armor their humvees and then turn around and let the enemy know their exact location and coordinate attacks on them using satellite capabilities.

Contrary to some suggestions we are not building any Star Wars movie-type weapons. During the initial stage of Operation IRAQI FREEDOM, Saddam attempted to employ GPS jammers against us. We of course responded in kind with GPS-aided munitions to destroy the jammers. That is a simple example of Space Superiority in action.

Safe and Secure Strategic Deterrent Capability

Strategic Deterrence continues to be a top priority even as we move further from the days of the Cold War. However, today's concept of strategic deterrence is far more flexible. Options for a Land Based Strategic Deterrent (LBSD) and Prompt Global Strike (PGS) are being examined along separate paths. Where possible, we will ensure a mutually supportive developmental path. Our ICBM alert force is one of our silent success stories. Day after day our space professionals north of Interstate 80 maintain an alert rate approaching 100 percent. Our modernization programs will only assist in sending those phenomenal rates even higher.

The discipline and work ethic instilled at our missile bases has been and continues to be the rock of Air Force Space Command. Our acquisition and engineering professionals who are privileged to spend a tour of duty in that environment reap a wealth of professional benefits. The operational mindset they gain is critical to everything we do.

Cost-Effective Assured Access to Space

Since the dawn of the space age, cost effective access to space has been a hurdle. This new century has brought with it unprecedented success stories but there is still work left to be done. With the Evolved Expendable Launch Vehicle we have seen the cost per pound cut significantly. Efforts to introduce responsive space concepts hold tremendous promise for future missions. Today we are doing our part by continuing our proven track record of space launch success. Our ultimate goal is to reach the point where safe, reliable, and cost-effective space flight is simply a fact. The hard work and progress at the start of this young century towards cost-effective assured access to space is evidence of our determination.

Conclusion

We have no choice but to succeed in space. We have heard the concerns of this distinguished committee and are determined to deliver results. Some improvements, like our space launch safety record, are immediately visible. The results of other efforts in areas such as space professional development, will take longer to realize. We know what is wrong. Now, we just have to put the resources in the right places. The bottom line is we are determined to do the right thing, right, the first time, and every time.

Once again, I thank the committee for their interest in this vital topic and look forward to working with each of you to chart the path ahead.