

Congressional Hearing Testimony
for the
Commander, Space and Missile Systems Center
Air Force Program Executive Officer for Space
Lt Gen Brian Arnold

INTRODUCTION

Mr. Chairman and members of the Committee, on behalf of the outstanding men and women of Air Force Space Command, thank you very much for the opportunity to talk with you today about what we are doing to improve the national security space acquisition process.

I echo the Under Secretary's remarks – we sincerely appreciate the hard work that Tom Young and his team did to highlight critical issues in space acquisition and provide actionable recommendations for the future. Improving how we acquire space assets is absolutely crucial for our nation's defense – and we are completely committed to this process. We have used the Defense Science Board's report to guide our improvement efforts and will continue to look to it as a measure of our progress.

Before I address some of the initiatives we have implemented in response to the report, I want to reiterate the Young panel and the Space Commission's finding that US National security is critically dependent upon space capabilities and that dependence will continue to grow. This underscores why I am so proud of the recent successes we have had that contribute to our nation's defense.

Ladies and Gentlemen, we have had 32 successful launches in a row – and in the last two years alone, we have launched 12 satellites delivering unprecedented capability to the warfighter. With these launches, we placed the final 2 Milstar satellites in orbit to provide robust, secure communications to our warfighters – we placed 2 GPS IIR

satellites in orbit – to provide precision navigation to both government and commercial users – we placed DMSP, NOAA and Coriolis weather satellites in orbit to provide 24 X 7 weather coverage for targeting and mission planning – we placed 2 DSCS satellites in orbit to provide enhanced voice and imagery communication in direct support of theater operations – we placed classified payloads supporting national priorities in orbit – and finally, we have demonstrated a new launch capability with our Evolved Expendable Launch Vehicles – ensuring continued access to the high ground. These successes are the direct result of the hard work and commitment across the space industry – our uniformed men and women, our civilian workforce, and the entire space industrial base.

This dedicated team is also working to revitalize how we do business – based in part on recommendations from the Defense Science Board and the GAO. As Mr. Teets mentioned, changes were incorporated into the final National Security Space Acquisition Policy 03-01 to address many of the issues highlighted by the Young Panel and the GAO report. We are just beginning to implement the policy and are confident that the new processes and reviews will address many of the cost, budgeting and performance challenges highlighted by the Panel.

What I would like to do today is provide specific information on what we have done at Headquarters Air Force Space Command and at the Space and Missile Systems Center to address these issues.

CONTEXT FOR CHANGE – NATIONAL SECURITY SPACE

Within the first months that I was at SMC, we made the transition to HQ Air Force Space Command. As a Command, we began the implementation of the National Security Space Commission recommendations. At that time, we laid out a plan to

address not only the short-term, pressing issues, but also the long-term challenges. We set our vision to become the Center of Excellence for Space and Missiles by building a reputation of producing quality products on time, at cost, that meet warfighter needs. Everything we do as a Command, under the leadership of General Lance Lord, is geared towards maintaining space superiority to defend all our critical capabilities in space. At SMC, we are supporting General Lord's vision by rapidly moving technology to the warfighter.

Shortly thereafter, I commissioned Booz Allen Hamilton – under the leadership of General Tom Moorman, USAF, Retired – to look at our programs and assess what was driving our cost challenges. Their recommendations kicked off a number of initiatives that crossed every aspect of the program life cycle – from R&D, to requirements, to the acquisition and fielding of our systems. The theme that evolved was clear – we need to get back to basics. That means placing mission success as the first consideration – period. That means putting mil specs and mil standards back where appropriate. That means making the government responsible for total system performance (rather than our contractors). That means getting a firm control on requirements. That means elimination of firm fixed price contracts on most developmental efforts. And finally that means revitalizing our capabilities in core business areas such as systems engineering, program management, and cost estimating. I'm sure you recognize that many of these efforts take significant time, but we're making progress, and I'd like to highlight just a few areas where we are.

MISSION SUCCESS

The Young Panel voiced concerns that cost had replaced mission success as a driver in space development programs. I'll reiterate Mr. Teets' commitment that mission success must be the first consideration when assessing risks and trades. To address this, I have institutionalized a formal flight readiness review process incorporating both a launch verification process and an independent review of both satellites and boosters prior to launch. The culmination of these reviews results in a Space Flight Worthiness Certification to me at the Flight Readiness Review.

In addition to the program efforts, I maintain an Independent Readiness Review Team that focuses on test failures, test as you fly exceptions, and hardware production abnormalities. It is a second set of eyes ensuring important steps in the launch process have not been overlooked. The independent readiness review team is chartered to advise me on technical risks of booster launch and satellite deployment and reports directly to me. They do not consider cost or schedule in their assessment. Additionally, the Aerospace Corporation compiles a Watch List of items that program managers want to bring before senior Aerospace and Air Force leadership. Typically, the items incorporated in the list are significant technical challenges faced by the Air Force-Aerospace-contractor team. The list is updated weekly.

Finally, we have provided mission assurance funding and added a government mission director for all of our EELV launches, and provided mission success incentives for each of our heritage launch programs. I can't over-emphasize the priority we place on mission success – it is what we are about.

IMPROVING COST ESTIMATING AND BUDGETING

Another concern brought up by the Young panel was unrealistic budgets and cost estimates. We agree this is a very challenging area and recognize this goes beyond SMC. As Mr. Teets said, we are teaming with the AF Cost Analysis Group, the OSD Cost Analysis Group and the NRO to best leverage these scarce resources while working to reinvigorate the function. At SMC, we are cherry picking the best from industry to strengthen our core capability as well as hiring high potential candidates and beginning an aggressive education and training program.

IMPROVING REQUIREMENTS PROCESS

In terms of requirements, both the GAO report and the Young Panel also discussed concerns with the requirements process. In addition to the newly created DSAB process where our stakeholders are clearly involved in every key program decision, we have begun an “Urgent and Compelling” process with Headquarters Air Force Space Command to closely manage requirements. This process was started on our Space Based Infrared System, but we are now rolling it out to all of our programs. In fact, Headquarters Air Force Space Command has embraced this process as a key initiative to move technology to the warfighter. In essence, this provides a structured method to collect, coordinate, and prioritize operational needs not currently in a base-lined program. Through this process only the top few critical requirements are identified from the potentially hundreds of needs not already incorporated in the program. Those needs are then formally presented to the Program Executive Officer and System Program

Office Director. Only then, and only if there is adequate funding, will additional requirements be added.

REVITALIZING CORE CAPABILITIES.

The Defense Science Board also commented on the erosion of government capabilities to lead and manage the space acquisition process. We absolutely concur and in 2001, we started focused efforts of professional development in key areas of the space acquisition business to ensure mission success.

A key driver in this effort is the systems engineering discipline, for it ensures that we build and deliver the system that best meets the users requirements. It is the system engineer who reviews the complex requirements and allocates the key functions, defines the interfaces, and ensures the end-to-end integrity of the total system. Thus, they are the glue if you will, that holds our complex systems together, and our capability in this area had declined. To revitalize this skill, we started and implemented efforts on many fronts.

First, we partnered with Cal Tech, and in fall of 2002, graduated 48 of our engineers with highly focused training in the system engineering discipline. In addition, we have also partnered with industry to provide on the job training for nine of our engineers. These partnership efforts with universities and industry are part of a comprehensive strategy to revitalize systems engineering proficiency at SMC. Other training efforts we have completed include a one-day class that provided an overview of systems engineering to over 2500 personnel. Finally, we are working with the Air Force Institute of Technology to sponsor both short courses and a master's degree program in system engineering.

Second, we are converging on common processes and practices across the Center to take advantage of best practices and make the best use of our engineering talent. This effort includes developing a baseline of systems engineering processes against a capability maturity matrix integration model (CMMI), developed for SMC by the Software Engineering Institute, to understand best practices and provide a focus for improvement areas. This also includes selection of a minimum set of compliance specifications and standards that can be used by all of our programs.

Third, we are implementing an integrated set of reviews and metrics to ensure adequate insight into all of our programs. Proactive efforts include integrated program assessments, integrated program baseline reviews, and revitalized program management reviews. Each of these is tailored to the specific program, however they include a set of standard metrics to ensure adequate understanding and insight of program risk and to foster the transfer of lessons learned and best practices across programs.

The steps we have taken, and are taking today, to revitalize our capabilities in systems engineering will allow us to lead the top level architecting and implementation of complex systems of systems. As many have commented, this is not an area that will be fixed quickly. Building this competency will require continuous, concerted effort and focus over many years. And as noted in Tom Young's report, in the interim, we need to rely on our Aerospace counterparts to fill in for the much needed organic capability. Next year we hope to fund an increase for our FFRDCs to help mitigate this gap.

SPACE INDUSTRIAL BASE.

Finally, the Young Panel commented on the necessity for industry to use proven management and engineering practices to ensure successful development of space

programs. One of the steps we are taking to improve this area is our industry benchmarking initiative. Our goal is to raise the bar across our space industrial team by providing candid feedback to individual contractors each quarter regarding their performance on key factors across their portfolio of business with SMC – broader than program specific feedback. The areas we assess include executive management, program management, cost management, schedule management, systems engineering and subcontractor management. These feedback sessions provide an opportunity – outside the normal assessment and award fee channels – to discuss risk areas, issues and concerns as well as opportunities across program boundaries. We believe these sessions have increased communication, clarified expectations, and have led to improvement efforts on both the government and contractor teams.

CONCLUSION

Thank you for giving me the opportunity to discuss a few of the initiatives we have undertaken to address the concerns Tom Young and his team highlighted. As I said earlier, these changes are not easy, they require a long-term commitment, and in many cases, we are changing things mid-course. We have a large number of programs in the development pipeline where decisions have already been made. We are imposing a new management discipline, but we need your support as we work through the challenges that lie ahead.

The capability of our space and missile systems and the commitment of our men and women continue to contribute to the successes we are having in OPERATION IRAQI FREEDOM and in the defense of our nation. Our unprecedented combat synergy is enabled by the high ground of space. Private Jessica Lynch's heroic rescue mission by

Special Forces relied on Milstar's secure, protected communications capability. Our communication satellites were also used to send re-targeting information to the B-1 bomber that dropped four GPS precision guided munitions on Saddam Hussein's suspected hide-out.

Our success in these operations relies on robust, secure communication, precise navigation and targeting, satellite intelligence, and the advanced warning of incoming missiles. I believe our contributions will continue to grow as the nation responds to emerging threats. Once again, I am honored to appear before you and welcome your questions.