



28th National Space Symposium

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General Norty Schwartz

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Introduction

General Moorman, thank you very much for that kind introduction, and more importantly, for your many years of distinguished service in and out of government. We are very grateful for your continued wide-ranging and influential contributions to the aerospace community and to our national security. I also would like to thank the Space Foundation for hosting this, the 28th National Space Symposium.

Returning to Colorado Springs is always an exciting homecoming for Suzie and me. This morning, we consider ourselves even more fortunate to be able to spend time with this distinguished audience of industry, academic, government, and military leaders from across the United States and around the space-faring world. This gathering is indeed representative of the broader commercial, civil, and military aerospace community, and the wealth of experience and talent that it assembles.

I appreciate the time to share a few thoughts today, ranging from the current state of national security space to that of our Nation's aerospace industrial base. My hope is to spur some discussion, amongst the bright and talented leaders in this room as well as elsewhere, on some of our most pressing aerospace- and national-security-related issues. Ultimately, I envision bolstering our cross-discipline, cross-functional efforts, all working in common cause.

National Security Space and the Air Force

When I talk about the Air Force and national security space, I, of course, refer largely to Tom Moorman's exceptional contributions leading to the establishment of Air Force Space Command—our lead organization in the full range of space and cyber activities, from research and development, test and evaluation, and the safe and reliable operation of the world's most sophisticated space and cyber systems. Operating at 134 locations around the world, the 42,000 Airmen, government civilians, and contractors of Air Force Space Command are dedicated and trusted stewards of approximately 85 percent of the Defense Department's budget for space, providing space and cyber capabilities that, according to the new Defense Strategic Guidance, are absolutely vital to the conduct of "high-tempo, effective operations" by



“modern armed forces”—particularly ours. Capabilities and services such as spacelift; secured, high-volume, and long-haul communications; space situational awareness; precision navigation and timing; missile warning; and weather forecasting are some of the indispensable enablers that are, and will continue to be, relevant in both combat and non-military environments alike.

Which is why, even with extraordinary budget pressures, we are protecting—and in some cases, even increasing—investments in our top acquisition priorities, including space systems that we deem critical to Joint warfighting requirements. In fact, space acquisitions represent 21 percent of all Air Force investment spending, and include 4 of our 10 largest procurement programs: Space-Based Infrared, Global Positioning System-III, and Advanced Extremely-High Frequency systems, and the Evolved Expendable Launch Vehicle.

So, in our Fiscal Year 2013 budget submission, we requested \$950 million for ongoing research and development, and test and evaluation, of the Space-Based Infrared System, or “SBIRS,” to continue to modernize our early warning capability. In 2011, we used SBIRS and the legacy Defense Support Program to alert global friends and partner forces to nearly 200 missile launches, and to report an additional 7,100 special infrared events. Our program management team continues to streamline schedules, reduce overhead, and achieve efficiencies, making possible the ongoing development and future procurement of SBIRS—geosynchronous earth orbit satellites. SBIRS-GEO will take infrared detection to the next level, allowing us to discern dimmer, shorter-duration infrared events, while providing more accurate missile launch and impact-point predictions—which is why SBIRS is clearly a high-priority acquisition for the Air Force.

Another capability that we are securing for the future is precision navigation and timing. Our 34 on-orbit Global Positioning System satellites—“GPS”—benefit a wide range of national and global activities, from financial applications like on-line banking to commercial applications like precision farming, and from everyday navigation systems in our automobiles to the Joint Precision Air Drop System, which employs GPS-guided parachutes to deliver vital materiel into austere, if not outright hostile, wartime environments—for example, the 18,000 pounds of winter



fuel that was precisely air-dropped to U.S. forces at Combat Outpost Herrera in eastern Afghanistan, this past November. With the oldest operational GPS satellite on orbit since 1991, and the most recent launch of GPS-IIF this past July, we look forward to continuing to modernize the constellation with a nearly-1.3-billion-dollar request in our FY 13 budget submission for GPS-III—an investment advancing both the GPS ground and space segments. Our specific efforts will include RDT&E toward an advanced atomic clock technology for greater accuracy, more jam-resistant military signals, a new “safety of life” civilian signal, and longer design life for greater cost effectiveness.

Another space procurement priority, the Advanced Extremely-High Frequency system, or “AEHF,” is a particularly noteworthy example of our commitment—and not just in investment dollars. What began as a troubled launch stemming from a propulsion anomaly, resulted in the successful placement this past October, of AEHF-1 into its operational slot in geosynchronous orbit, marking the beginning of what will be many productive years of providing secure, jam-resistant communications for our national leaders, combatant commanders, and our Canadian, Dutch, and British partners as well. Owing to the resolute commitment and creative innovation of our professionals at the Space and Missile Systems Center in Los Angeles, we were able to devise a strategy to raise the space vehicle from its transfer and intermediate orbits to its operational orbit, all the while preserving fuel for the planned fourteen-year operational life of AEHF-1 to provide a ten-fold throughput increase over the legacy Milstar system. Toward the remaining development efforts and continued procurement of AEHF-5 and -6, we have requested \$786 million in our FY 13 budget submission.

Sustainability Challenges

Clearly, space-borne capabilities have played, and will continue to play, a prominent role in our collective Joint team capabilities. In total, our Fiscal Year 2013 budget request includes \$9.6 billion for investments in our space programs, to help us maintain our overall preparedness in addressing wide-ranging contingencies.



For instance, last month marked the one-year anniversary of surge operations across multiple fronts—full-spectrum operations that spanned intercontinental distances, from humanitarian and disaster relief in East Asia, to combat operations in North Africa. In this scenario—our very own version of “March Madness 2011”—your Air Force brought air, space, and cyber power to bear, with unparalleled speed, range, tailorability, and versatility, to the benefit of U.S. and coalition forces.

Behind the scenes of cargo aircraft in Japan, or fighters and bombers over Libya, was our Joint Space Operations Center, providing the full range of reach-back space capabilities for theater commanders around the world. There are many examples of how Space Command Airmen provided timely and vital capabilities; the linking and cross-banding of X-band with Ka-band communications in the wide area surrounding Japan during our humanitarian and disaster relief efforts there is but one of them.

But with this dependence on space and cyberspace comes also the need to address challenges to our assured and continued access, freedom of action, and sustainability in space. We almost certainly are all familiar with General Bob Kehler’s characterization of the space domain as being increasingly “congested, contested, and competitive.” This speaks directly to how we must enhance our efforts to sustain our operations in space over the longer term, and includes overcoming significant challenges such as the need for more effective management of the frequency spectrum, upon which our ability to command and control our earth-orbiting assets relies. As our dedicated organization for this particular challenge, the Air Force Spectrum Management Office, by maintaining some-30,000 frequency assignments that are essential to Joint Force test, training, exercise, and operational requirements, fulfills its broad mandate to preserve and assure access to finite electromagnetic spectrum resources for the Air Force and selected DOD activities. Domestically, our Spectrum Management Office provides ongoing advice to President Obama’s directive to identify portions of the spectrum for broadband wireless services, while internationally, it is engaged with the U.S. delegation to the U.N. International Telecommunication Union’s World Radio Communication



Conference, to protect our Nation's profound interest in the electromagnetic spectrum.

Another challenge is debris management, both with current debris as well as with efforts to curtail the future creation thereof. As a Nation, we are committed to addressing this problem through expanded engagement within the United Nations, with other governments, and with non-governmental organizations. As well, the United States has adopted standards to minimize debris that, in fact, are more restrictive than the U.N. Space Debris Mitigation Guidelines. Supporting these ongoing efforts is a priority for the Air Force, which is on track to meet future demands in debris management as well as broader space situational awareness efforts. Currently utilizing a legacy system dating back to the mid-1980s, Airmen of the Joint Space Operations Center, or "JSPOC," can look to initial operational capability—we anticipate toward the end of this year—of the first increment of the new JSPOC Mission System, to enhance their processing of some 155 million sensor observations, and their tracking of approximately 22,000 manmade objects in orbit. Last year, we completed the restructuring of the JSPOC Mission System acquisition program to better align initial capability deliveries with current operational needs. With the future automation of many of today's manual tasks, and the incorporation of staggering amounts of sensor inputs, we will be afforded with a more efficient fusion of data from disparate sources, all toward a correlated situational awareness picture and comprehensive, relevant, and actionable information for a variety of space users—civil, commercial, and military. With the new JSPOC Mission System, we will be better poised to make even more substantial contributions to broader space situational awareness efforts, involving partner governments, intergovernmental organizations, and global commercial entities, in detecting, warning of, and attributing space systems disturbances, whether stemming from natural or manmade causes.

The Criticality of Whole-of-Nation Teamwork

I appreciate that the aerospace industry, as a key partner in national security related matters, continues to face a variety of challenges: competition for capital, sizeable investment profiles, and sustaining a competent and qualified workforce,



just to name a few. I also believe that there are various broader strategies that can leverage multiple aerospace industry sectors to help overcome some of these challenges.

But inherent to any potential strategy is the conviction that second- and third-tier suppliers of necessary hardware, software, and services are vital, as the major aerospace firms are, to the overall health of our Nation's aerospace industry. From a military perspective, success of our mission depends on commitment, innovation, and creativity from all quarters of industry and government. And in an endeavor as technically complex as space systems, comprising both the satellites themselves as well as ground segment architecture, tapping into talent wherever it might reside—from the large aerospace firms to small "8(a)" businesses—is especially important. It is widely recognized that the small business community possesses many of our Nation's brightest minds, affording us with cutting-edge technology and innovation that our warfighters need. In fact, one of the most widely-acknowledged strengths of the small business community is its ingenuity and agility in conceiving, testing, and demonstrating novel ideas to address pressing challenges. As an acting director of the Defense Department's Office of Small Business Programs once testified in 2009, "Innovation...is what small businesses do best." And from this wellspring of creativity and engagement have come many of the cutting-edge technology, systems, and services that our warfighters greatly need, to enjoy an advantage on the battlefield, and to prevail in combat.

It is also well-acknowledged that the robust networks and relationships within the small business community can be leveraged to provide timely solutions to multiple challenges. These relationships are at once competitive and cooperative, representing the best of a free market system that promotes innovation, incentivizes creative solutions, and leverages the relative strengths of multiple small firms. These small business networks also facilitate a certain agility that often, depending on the particular requirement, provides solutions more at the "speed of need" than perhaps larger firms can do under bundled and complex contracts.

In the larger sense, the tension between big and small firms creates a dynamic environment that increases the quality of solutions and potential for options while



making them more affordable. In circumstances in which technical obsolescence can occur in mere months, the greater agility of small businesses to respond to such needs can be valuable in overcoming more cumbersome arrangements that are often inherent in larger government contracts. Collectively, 8(a) businesses bring about healthy and constructive challenges to the processes and practices of larger arrangements, and compel all of us to rethink, revisit, and innovate.

But oftentimes, large firms are the only ones with the organizational setup and wherewithal to fulfill other, equally critical, larger-scale requirements. And, moreover, even with ongoing efforts to shore up our acquisition workforce, we are not quite at the point where we will be able to maintain, generally speaking, multiple interfaces with industry for any single major program.

I mention all of this because I think that we need to expand the dialogue when we talk about the health of our industrial base. As one example, we have tended to associate major aerospace activities, such as launch services, only to the major aerospace firms. There are, of course, benefits to having the government directly dealing with one prime contractor. But I would ask: What is the optimal balance, in terms of costs and potential benefits, between entering into bundled contracts with major aerospace firms only, and perhaps forging more regular interactions with smaller, lower-tier suppliers of components and services? Can the government sustain qualified professionals in sufficient numbers to explore the latter possibility to its full potential? I don't have an immediate answer, but I do wonder because I believe that embedded in these issues are important keys to greater efficiency in harnessing the best of both large and smaller firms.

In the meantime, as we move forward with the programs that I mentioned today, and certainly other major defense acquisition programs, "affordability" and "timeliness" will remain our overarching watchwords. The government will continue to rely on the expertise, creativity, innovation, and productivity of private industry—again, throughout the entire chain of material and service providers, large and small—while it works to ensure the least onerous regulatory regime possible, such as the proposal, announced yesterday in Washington and here at this symposium,



to normalize export control of satellites and related components, by moving their jurisdiction from the U.S. Munitions to the Commerce Control List.

But there will remain a fundamental need for government and industry efforts to be unified in relentlessly keeping costs down,

- by designing affordability into new weapon systems programs,
- by structuring more restraint into their contracts,
- by stabilizing requirements and matching ambition with actual operational need,
- by balancing caution and discipline with assuming reasonable and justifiable risk in the transitioning of appropriately matured technologies to applied research and development,
- and by keeping schedules on track.

While the government must continue to maintain reliable funding streams and avoid requirements creep, industry must continue to deliver capabilities on cost and on time to America's warfighters. It is so very clear that a broader business base can promote such positive outcomes.

Conclusion: Our Air and Space Nation

We in this room very well appreciate that air and space affords our Nation with wide-ranging benefits. As a Nation, we have known this since we emerged as the world's first—and by many measures are still the world's only—genuine air and space nation. We took to the skies in powered flight over the sands of Kitty Hawk, and we remained on that ever upward trajectory, bounded not even by “the surly bonds of earth” through the Mercury, Gemini, and Apollo missions, until we landed at the Sea of Tranquility.

What began as romantic notions of the imagineers of yesteryear have evolved into indispensable everyday utilities of the innovators of today. As aerospace enthusiasts and practitioners, we know that America depends on this vital domain for a wide range of strategic interests. Indeed, with many indicators that presage a continuing upward trend of air and space power's importance to our national interests and our daily lives, the ability for those who aspire to take to the skies and



into the heavens, to pursue their lofty aspirations, remains as promising and inspiring as it was for so many of us over recent decades. Together, we can—and must—further pick up the pace, to maintain our leadership in air and space.

Thank you, all, for your time and attention today, and more importantly, for your professional efforts every day.