

Testimony before the U.S. – China Economic and Security Review Commission

Hearing on “China in Space: A Strategic Competition?”

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Good morning and thank you, Chairman Bartholomew, Vice Chairman Cleveland, and members of the Commission, for the invitation to speak on this important topic. Throughout recorded history—and likely even before then—mankind has been inextricably linked to information from space. The waxing and waning of sun paths and moon phases provided critical information about seasons and time, and the stars, navigation over great and treacherous distances. What was once a seasonal, monthly, or daily connection is now nearly continuous. Satellites furnish time to within nanoseconds and position within meters, as well as 24-7 communication, imagery, weather, entertainment, and much more. Many of us likely got here today because our lives are connected to space.

The world space economy is currently valued at over \$385 billion. At least 666 intelligence satellites from 38 countries monitor the globe; 790 communications satellites from 45 countries move critical data; 121 navigation satellites from six countries connect point As to point Bs; and 303 scientific satellites from 38 countries push the frontiers of learning. Of these, the United States accounts for 353, 391, 31, and 94 respectively—a 46 percent eagle’s share if you do the math.

Having experienced nearly 7 percent annual growth for a decade, top investment firms predict over a trillion dollar space industry by 2040 with some going as high as 3 trillion. With space-based broadband, cheaper reusable rockets, and space tourism nearly here, and energy, mining, and transportation looking increasingly possible, our national interests—and treasure—are increasingly migrating to space and, correspondingly, our national security concerns.

Countries like China have already demonstrated their intention to escalate hostilities into space. First conducting a debris-forming anti-satellite test in 2007, China is developing antisatellite missiles and lasers that will be fully operational within a few years. Having opened this Pandora’s Box, cyber, jamming, high-power microwave, and space-based weapons cannot be ruled out as future threats, especially when Kepler’s laws make critical asset locations uncomfortably predictable.

With so much riding on industrializing space, it is naive to assume conflict will not reach escape velocity. Why fight a nation’s stealth fighters, aircraft carriers, or brigade combat teams if you can defeat satellites that guide their maneuver, communications, and weapons? Why fight their military at all if their critical economic veins flow through space?

We can look the other way from our terrestrial comfort zone no longer. Wars will extend into space until a new theory of deterrence supplants the apparent advantages hostilities in space can provide. Consequently, the Air Force is developing options—and the training, manning, and equipping to use them—so that space is never our nation’s Achilles’ heel; rather, our strong shield protecting a new industrial revolution and all its exciting possibilities.

This is the hope emerging from Pandora’s Box. The Air Force has maintained the world’s most cutting-edge lethal force for over 70 years with systems known and unknown. We have been pioneers in uncontested space, providing GPS to the world, monitoring space debris to keep commercial satellites safe, detecting ballistic missile launches to defend our friends, allies, and the American people. Now that our gloves have been forced off, we are combining our warfighting and space know-how to contend with the threats we will likely face.

This Commission is tasked to address whether we are in a strategic competition with China in space. I hope you conclude “yes.” Given growing global financial interests—concurrent with China’s present militarization of the Final Frontier—we must not be late to recognize the importance of new thoughts, policies, technologies, and coalitions to overcome future challenges to global development and exploration in space. As part of what must be a national approach, our present Air Force budget reflects the seriousness of keeping space safe and secure for all.

The Air Force’s space budget request is \$14 billion—17 percent larger than last year’s. But it isn’t just larger—it incorporates speedy acquisition authorities, faster contracting approaches, and strategic industry partnerships to compete against emerging space threats—over decades if need be—to keep this domain safe for worldwide exploration and economic development. Our eyes are on the threat; our ears, on the warfighters’ needs; and our foot, on the development accelerator.

Though much of our space strategy and capabilities are classified, I can share some highlights in three areas: space warfighters, fast acquisitions, and industry base expansions.

### **Space Warfighter**

Everything we do is about the warfighter: those current and those in future. The Air Force is building multi-domain Airmen to fight as part of a joint force. Just like cyber, no scenario of conflict decouples from space, so our warfighters must be fluent with every Service, every adversary, and every contingency. Our recent budget request funds advanced force development, adding 19 weeks of space warfighter courses, a U.S. Space Command to conduct operations, and initial planning efforts for a U.S. Space Force.

From our Chief of Staff to our warfighters on the operations floor, multi-domain operations are driving new requirements and closer relationships with acquisition. The highlight of this budget is the Advanced Battle Management System. Envisioned as a family-of-systems replacement for the aging JSTARS, this capability will cut across all facets of the Air Force—air, space, and cyberspace—trailblazing a path for how we design and use future distributed systems.

With so many new challenges driving new approaches to space-based capabilities, it is no wonder a faster, smarter acquisition system is a top priority for our Service Secretary.

### **Fast Acquisitions**

Restoring a competitive mindset to how we design, manufacture, and sustain war-winning systems has taken deep root in our new space programs. New authorities and close partnership with our warfighters have revved our acquisition engine, removing 92.75 years of unnecessary schedule on our Century quest to reach 100—21.5 of it comes from space. Stealing time back from our adversaries and giving it to space warfighters is a paradigm that must become the norm. Thankfully, we have talented space operators and acquisition professionals itching for the change, and this past year, we empowered them to affect it.

First, we reorganized the Space and Missile Center, adding three new Program Executive Officers—our highest acquisition positions—with delegated authority to speed decision velocity. They aggressively applied Section 804 authorities and Tailored 5000 approaches to accelerate new satellite programs. Next-Gen Missile Warning is on track to deliver 3.5 years early. Protected

Tactical Enterprise Service is fielding on carrier strike groups 1.5 years ahead of schedule. Our strategic, tactical, and polar SATCOM programs combine for 8 years of acceleration—and the latter received the Department’s top acquisition award for proposing a U.S. payload on a Norwegian satellite, saving time and money. Not just fast, smart too.

Second, we stood up our second software factory in an Air Force-wide shift to agile software development. Like our Boston-based Kessel Run, named from Star Wars, Los Angeles now has Kobayashi Maru, named after Star Trek’s impossible training scenario that Kirk hacked to win. Inspired by this, Kobayashi Maru is hacking space command and control with developers and operators working side by side, pushing code to warfighters in months, not years. Having delivered their first increment to Air Force Space Command, we are excited to see more space programs shift to agile software development. We are also glad our naming convention is balanced between the Star Wars and Star Trek universes. Hopefully, the gods of “nerd-dom” will smile on our new software motto: “May our Force live long and prosper.”

Third, we are focused on contracting reform. Prototype contract awards at the Space and Missile Center are down to 90 days—twice as fast as historical norms—and contingency contracting to provide overhead support to California’s battle against deadly wildfires completed in 8 hours. These steps are part of longer journey to bring down times for all contract types. We must have speed when our nation needs it.

Fourth, to accelerate classified capabilities, we stood up the Space Rapid Capabilities Office and initiated three classified programs that continue in this budget. Patterned after the awesome office that manages our X-37 spaceplane, this new Program Executive Office brings our space total to five, increasing decision speed while developing the aces our space warfighters need up their sleeves.

Fifth, we have expanded external partnerships with DARPA and the Strategic Capabilities Office on disaggregated Low Earth Orbit constellations and new classified systems. Lowering risk on high-payoff technologies helps us leapfrog the valley of death and, hopefully, future threats. Our door is always open for new partnerships where we see the potential for speed and delivering for the warfighter.

### **Expanding Industrial Partnerships.**

As we accelerate programs, we are also looking ahead at the long-term health of our partnerships with traditional defense companies and commercial ones too. We cannot compete over time—nor build the joint force we need—without a sustainable strategy for both types. We are calling on subject matter experts, and panels like this one, to help us get this complex issue right. But we are not waiting around to move out on steps we think will help.

One step is increasing competitive prototyping. Space programs like Next Gen Missile Warning, Enhanced Strategic SATCOM, and Protected Tactical SATCOM are using prototyping so that market entrants can compete with incumbents, induce better prices, and leave behind a stronger industry base for future programs. This strategic thinking needs to be everywhere and all the time in acquisition. Until opportunities to design, build, and launch critical satellites occur more frequently and routinely, we must plant seeds in programs to bear future fruit.

Another step is pursuing collaborative development partnerships when defense and commercial interests align. Launch Service is a fantastic example of Defense spending spurring a new commercial launch industry that meets national security requirements. We are also beginning collaboration with industry on how truly operationally-responsive space might work. These examples are encouraging but need to become more commonplace. With so many services moving to space, the trend of dual-use capability partnerships should continue and expand.

A third step is significantly accelerating how we do business with space startups and commercial tech providers. Currently, awarding a contract in months is a flash for the government. For startups living hand-to-mouth, it is an eternity. As a result, we are not competing for the best space ideas in the accelerating tech ecosystem.

Orbiting our challenges to reach escape velocity should be easy, rewarding, and hopefully a bit cool. Instead, startups face an amusement park sign: "You must be this tall to ride the ride." I am excited we are finally taking it down.

On March 6-7, we held our inaugural Air Force Pitch Day in New York. We invited small businesses from across the country to pitch their ideas, and our venture team had 51 of them on one-page contracts, worth \$8.75 million, in less than 15 minutes each. The fastest was done in three! This took place during a fantastic week of 242 small business awards, many of which were space-related.

With \$660 million in small business innovation dollars available annually, we are an ideal space investment partner: our money is non-dilutive; our company equity requirements, nil; our return on investment expectations, conservative; our resources, significant; our payment speed, lightning; and our mission, nothing less than inspiring. With the Pitch Day authority now delegated to the field and our next event being an Air Force Space Pitch Day—we expect big things from small business dollars in future.

## **Conclusions**

The Air Force is taking a big first step towards dealing with future challenges we face in space. With Pandora's Box open, the Air Force has moved out on designing defensible space, accelerating how we buy it, and training to use it in multi-domain conflicts. With so many space-related technologies on the cusp of maturity, the future is a deck of wildcards, where hands are difficult to predict. To compete and win, we have to be fast, work with our entire industry base, and have a few aces up our sleeves.

With recent budget initiatives, we have made a good start, but we must follow through with many more to be the security guarantor of a coalition strategy to compete and win in space. Like many, I hope for Great Cooperation—vice Great Competition—with China on many fronts. However, it appears a distant star in current skies. Until present constellations change, we must respect how much of our lives—like our forebearers—connect to space, but unlike them we must prepare to defend it to keep its future bright.