Potomac Officers Club
Air & Space Summit

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Good morning! It's an honor to be here and to kick off this year's Air & Space Summit. First, a big thanks to the ***Potomac Officers Club*** for hosting this fantastic event. We have quite a distinguished lineup of speakers and panelists today, to include my good friend and Space Force acquisition giant, Steve Purdy, along with the Director of MDA and my undergraduate classmate (from Clarkson University), Heath Collins. Now, I should tell you that Heath is one year junior and one star senior to me…so we all know who studied harder in school!

Today's conference is focused on the importance of space to our national security. Let me tell you, this has been the National Reconnaissance Office's primary mission focus since our inception. For nearly 64 years, the NRO has been leveraging leading-edge technology and the vantage point of space to secure and expand America's intelligence advantage.

Space gives us the ultimate high ground…a strategic edge that enables us to view the world with ever-increasing fidelity and persistence. However, as we all know, our competitors are working tirelessly to deny us this advantage.

America's competitors are becoming smarter and steadily more capable in their efforts to compete with us in space. China is just one example of this challenge, and their commercial space sector is on pace to become a major global contender. Last year alone, China invested billions in its commercial space sector… along with a far, far greater investment in their government programs… and, once again, achieved a record number of launches, sending 68 rockets into orbit with 270 satellite systems. This increased access to space is opening new markets and capabilities for China and, when combined with their growing defense space inventory, vastly improving the range and lethality of their military operations.

Countries like China and Russia are also developing, testing, and deploying their own space-enable weapons and anti-satellite capabilities. This could be non-kinetic, through directed energy or cyberattacks, or engaging in electronic warfare such as jamming or disrupting satellite communications and navigation signals. These countries also possess a host of kinetic ASAT capabilities, many of which they have already tested against their own space systems, that pose a threat to all spacefaring nations.

Now, let me be clear, this is not some nascent concern about a distant future threat – **the NRO is literally in the fight today.** We are acutely aware that our systems and capabilities are being targeted. This is because NRO is the world's premier organization for space-based intelligence, surveillance, and reconnaissance, or ISR. NRO systems and the data they provide are already essential to analysts, policy makers and the warfighting community. And our contribution to national security efforts will just continue to significantly grow into the future.

Simply put, our competitors recognize this fact and they want to take away this advantage… but we will not let that happen.

So, this morning, I want to talk about what we at the NRO are doing to maintain our competitive edge in delivering ISR from space – specifically, our efforts to advance NRO intelligence collection capabilities, to deter threats, and to build resilience… in peacetime and times of crisis and conflict.

NRO mission:

As a reminder, the NRO's mission is to research and develop, acquire, launch, and operate the world's most capable array of space-based ISR systems along with the associated ground and information technology infrastructure.

As both a Defense Agency and a member of the Intelligence Community, we are responsible for supporting a host of customers (civilian agencies, military commanders, Allied partners) by collecting the information they rely on for making critical decisions.

As I've stated, the NRO is essential to preserving national security because we provide the United States and our allies with an **information advantage.** From the ultimate high ground of space, we can collect data no one else can, and we can deliver it to warfighters, policymakers and first responders faster than anyone else – even within seconds of detection. NRO systems are often the only tools able to access denied areas, hostile territory or rugged terrain. We can capture the necessary information without risking human lives or infringing on other nations' territorial sovereignty.

Throughout history, this information advantage has been a catalyst to achieving our nation's objectives time and again. Just one example… during the Cold War, the NRO developed advanced reconnaissance systems like the CORONA and KH-series satellites to monitor Soviet military capabilities. These satellites provided critical imagery of missile sites, airfields, and nuclear facilities, dispelling fears of a "missile gap" and informing U.S. strategic planning.

This vital intelligence enabled arms-control verification and supported U.S. decision-making at pivotal movements in our history, including the Cuban Missile Crisis and Soviet military actions in Eastern Europe. By maintaining constant surveillance from space, the NRO ensured U.S. leaders had the key insights needed to deter direct conflict and manage global tensions.

As you all appreciate, in today's complex geopolitical environment, this information advantage is even *more* vital to our nation's civilian and military leaders.

NRO priorities:

To stay ahead of today's threats, the NRO is taking on the **biggest transformation** in our six-decade history. We are **laser-focused on delivering timely, accurate information** – how it's

collected, fused, and rapidly disseminated to those who depend on it. This leads to four key priorities, which I'll talk about in more detail:

1. Integrating cutting-edge technology into our ISR constellation
2. Expanding our access through the proliferation of space and ground-based systems
3. Leveraging advanced computing and artificial intelligence to automate processes and integrate data
4. Building our resilience by hardening NRO's global architecture

1. Leveraging advanced technologies:

Let's start with advanced technologies. Today, NRO is investing, heavily, in next-generation SIGINT and GEOINT technologies; key capabilities that will enable us to see smaller objects, hear dimmer signals, and capture moving targets. We continue to push the boundaries of technology; in areas like hardened microelectronics, quantum computing, autonomy, and photonics; all to ensure we continue to develop and field the world's most capable suite of space based ISR systems. These factors will increase the **precision** of our collection anywhere in the world.

While most of our latest and greatest activities remain classified, I can say that we are developing pathfinders and research and development systems to reduce the timelines and technical risk for maturing next-generation capabilities from concept into operations.

In January and March of this year, NRO launched two R&D demonstrator missions through our Advanced Systems & Technology Directorate, or AS&T. These research demonstrator satellites are specialized spacecraft designed to test new technologies, concepts, and capabilities in the space environment before they're implemented in operational satellite systems. One of these missions is called BIG IMPACT 2 – which consisted of two 6U CubeSats that the tested the use of small-scale optics and artificial intelligence applications on-orbit.

In recent years, the NRO has also leveraged pathfinder spacecraft to demonstrate system capabilities, perfect operational concepts, and assess new industry providers years before a full operational system is delivered. All this enables NRO to provide new and advanced capabilities to our customers faster and more effectively.

2. Proliferated architecture:

Second… we are vastly expanding the number of NRO collection systems and creating the largest and most capable government constellation in our nation's history. Over the next few years, we are more than quadrupling the number of NRO satellites on orbit, which will enable us to collect over 10 times more imagery and signals.

The proliferation of our architecture is not a future vision; it's happening *now*. In just a two-year period, NRO has put more than 200 satellites on orbit. We have another launch, NROL-48, scheduled in early September – with additional launches that support the fielding of our proliferated architecture planned through 2029.

More satellites on orbit shortens revisit times and increases our observational **persistence.** When something happens, anywhere on Earth, we will see it and hear it. Greater collection frequency enables us to maintain track custody and detect patterns and anomalies more efficiently, while making it harder for our adversaries to hide.

Another benefit is **timeliness**. As we grow our presence in space, we are also expanding our ground infrastructure around the world. Our distributed architecture is allowing us to rapidly push data to the tactical edge. Complemented by advanced command/control and mission planning tools and automated operational processes employed at our ground stations, we can more effectively manage and task NRO systems faster than ever. This helps ensure that our warfighters, analysts, and policymakers get real-time, tactically relevant, situational awareness and intelligence they need, when they need it.

3. Automation:

Of course, with rapidly expanding satellite constellations collecting volumes of increased data, processing and integrating it quickly and at scale becomes even more important. So, our third priority is leveraging advanced computing capabilities and artificial intelligence to drive automation into command-and-control functions, mission planning, sensor tasking, data distribution, and even data exploitation.

The NRO is continuing to push the boundaries of autonomy, experimenting with pretrained AI algorithms to perform sensor tasking and overall mission management.

At the same time, we're working with military services and combatant commands to integrate these capabilities into their operations so they can directly influence collection. While they're not manually selecting individual sensors, they are (***with the proper delegated authorities***) able to initiate tasking at the mission level, with automation handling the execution behind the scenes.

An example of this is a prototype NRO orchestration system that lowers barriers to access, enabling authorized users to designate certain objects as priorities for collection. Rather than having to possess the broad knowledge of specific systems and policies necessary to independently task each capability involved, our Object Based Orchestration system, or OBO, automates this process. It considers which intelligence assets best offer insight into a specified object, automatically reaching out to the appropriate mission management systems to orchestrate collection that helps the user understand where the target object is, where it is moving, and what it is doing. In concert with our partners across the intelligence community: NSA, NGA, DIA, we have conducted numerous demonstrations to explore and expand OBO's capabilities and we are placing a very high priority on operationalizing this work going forward.

In addition, sophisticated dashboards and other tools like **THRESHER, BODHI and FADE/MIST** collectively fuse and combine massive amounts of data from multiple sources to provide a precise, common information picture. To advance the power and utility of these tools, the NRO has been developing Large Language Models (LLMs) which represent a transformative capability in this space, able to process and analyze vast volumes of textual data at unprecedented speed and scale. These models excel at identifying subtle connections across disparate documents, extracting valuable insights from mountains of reports or petabytes of pixels, and surfacing the proverbial "needle in the haystack" that human analysts might miss due to volume constraints. This enables us to share information faster, more reliably, and more

conveniently, **improving intelligence outcomes**. During recent global events, you can be sure our combatant commands were taking full advantage of these tools.

All of this culminates in NRO's next evolution of our Future Ground Architecture, what we are calling **FGA 3.0**, that will support our expanding array of space systems and the massive increase in data being collected. Through FGA 3.0, which is now in the initial stages of acquisition, we are foundationally driving automation and architectural changes that will meet closed-loop Tasking, Collection, Processing, Exploitation and Dissemination, or TCPED, and low-latency, time-critical missions to improve indications & warning and object custody.

FGA 3.0 will use artificial intelligence and machine learning, data fusion, and object curation tools to integrate NRO data with commercial and tactical detections, maximizing the value of overhead collection and meeting the mission-critical needs of the IC and our warfighters.

4. Resilience:

The fourth priority I want to highlight is resilience. Because adversaries are looking for the easiest and least attributable ways of attacking our systems or denying us the use of our networks, resilience is something we focus on – and invest in – with great care and forethought.

Earlier, I mentioned NRO's focus on proliferating our space and ground architectures and how this will vastly increase our persistence in coverage, expand the production of imagery and signals data, and reduce the timeline to delivery products to our users around the world. Proliferation is also creating **resilience** through the power of scale. With more satellites on orbit, we eliminate single points of failure; disaggregating our capabilities means they, individually, become much less valuable targets. In other words, to create a mission impact, an adversary would have to disrupt, degrade, or destroy numerous portions of the architecture… not just one node.

However, resilience across national security space missions requires two additional factors: system hardening and distribution of risk.

Hardening can involve shielding satellites against certain forms of attack and investing in the security elements of ground installations. We are investing billions of dollars in resilience here on Earth - enhancing our infrastructure, including our water and power facilities and communications lines, and improving our cybersecurity; through increased training and tools for our operators and monitoring our systems through ubiquitous telemetry. The objective is to deter attacks during peacetime and sustain our operations in times of crisis or conflict – mitigating risk on orbit, on the ground, and everywhere in between.

Distribution of risk involves multiple layers of edge computing capability, with redundant data paths, and synchronized databases local to the edge node. In this resilient network, data is passed via varied means, to nodes instantiated in such a way that they can failover automatically across regions. If we architect a system like this… and we are… it becomes incredibly difficult (ideally, impossible) for a hostile actor to deny or disrupt our global operations.

Acquisition:

So how do we get all these capabilities on orbit and deployed around the world as quickly as possible? In short, our **acquisition strategy** is becoming even more aggressive.

I know today's audience is filled with leaders from private industry; let me be clear, **the NRO wants to work with you**. If you have innovative products or solutions that can make our operations ***better, stronger, or faster***, we want them (yes, that does sound like we're creating the Six Million Dollar Man of the space community). We are using new acquisition processes and new contract models to cut the time from concept to delivery, and we are bringing in new talent and new providers… from our partners in industry, academia, and our allies.

There is no one-size-fits-all strategy – the NRO has the **flexibility and expertise** to acquire the technology and tools we need:

- We have full acquisition authority (both Title 10 and Title 50) and a well-defined strategic vision
- We have an integrated architecture that ensures end-to-end system delivery from R&D to operations and sustainment
- Most of all, we have a talented, highly experienced workforce with deep knowledge of the acquisition process, and a flat organization that allows decisions to be made fast

These advantages enable the NRO to leverage commercially available products into technologies we are developing. **We will source what exists and create what doesn't.** When we need to develop a product or technology that we cannot procure from the commercial market, NRO will often break the capability requirements down into smaller components so we can leverage greater swaths of the industry base, finding the "best of breed" for each part of the overall system. Often, this opens the door to startups and non-traditional suppliers.

Another way we are opening our doors is through special agreements afforded to us through our recent designation as a **federal lab**. Known as the Space Reconnaissance Laboratory, this offers a key touchpoint between government, industry, and academia. As one of 300 labs in the Federal Laboratory Consortium, we are part of a broad community that can pursue innovation while sharing costs, resources, and risks. Partnership agreements such as our Cooperative Research and Development Agreements, or CRADAs, promote flexible, collaborative relationships – while protecting intellectual property – to enable joint knowledge sharing and testing of new technologies.

The NRO also has several programs that are meant to build relationships with start-ups and other commercial partners faster than before – offering them opportunities to bring new capabilities to the table. The results have been very encouraging. In the past, the U.S. government leveraged products from just one or two commercial ISR providers. Today, the NRO offers organizations across the community access to **13** separate ISR vendors (and growing). These partnerships allow us to provide data across several phenomenologies… not simply electro optical imagery, as was the case just a few years ago.

And for those who want an opportunity right now – just this month, our Commercial Systems Program Office, or CSPO, released a request for proposal for the next acquisition under our Strategic Commercial Enhancements program. This **Commercial Solutions Opening, or CSO,**

marks the first time the NRO has an acquisition focused on multiple phenomenologies, including electro-optical, radar, hyperspectral imaging, and radio frequency. It also includes, for the first time, light detection and ranging, or LiDAR.

And we are opening our acquisition to most of the commercial remote sensing industry's new and emerging providers. Also, unlike the NRO's acquisitions through Broad Agency Announcements, which have a set deadline for submissions about 30 days after the release of the RFP, this CSO has a five-year window.

Finally, when we put any request out to industry, we clearly define our requirements and communicate with the community… early and often. We not only want the most innovative products and solutions available; we want to accelerate the time from concept to delivery. And let me add a quick public service announcement that the NRO hosts CEO Forums, Industry Days, and other opportunities to share your ideas *(like the Unclassified Tech Forum, hosted by our AS&T Directorate, happening today and tomorrow in Chantilly)*.

Closing:

As I close today, if you take away nothing else from my remarks, know that the NRO is tirelessly pushing the leading edge of the possible to deliver intelligence products that our nation needs. We are building **innovation, agility and resilience** into everything we do. Our skilled, dedicated workforce and our strong partnerships across government, industry, and with our allies are creating and operationalizing the technologies that will help us stay ahead of future threats. We don't just need to innovate – we need to innovate faster than everyone else.

As the global environment changes, with more actors vying to challenge our nation's influence on the world stage, the NRO is evolving to stay ahead of the competition. We are using the vantage point of space to sustain an information advantage for the U.S. and our allies; to provide information that is timely, accurate and relevant to our customers around the world; and to give our warfighters and decision-makers an irrefutable edge against any adversary.

Thank you. I'm happy to take some questions.

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