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HEARING

ON

NATIONAL DEFENSE AUTHORIZATION ACT FOR FISCAL YEAR 2014

AND

OVERSIGHT OF PREVIOUSLY AUTHORIZED PROGRAMS

BEFORE THE

COMMITTEE ON ARMED SERVICES
HOUSE OF REPRESENTATIVES
ONE HUNDRED THIRTEENTH CONGRESS

FIRST SESSION

SUBCOMMITTEE ON STRATEGIC FORCES HEARING

ON

BUDGET REQUEST FOR NATIONAL SECURITY SPACE ACTIVITIES

HEARING HELD
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FISCAL YEAR 2014 NATIONAL DEFENSE AUTHORIZATION BUDGET REQUEST FOR NATIONAL SECURITY SPACE ACTIVITIES

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
SUBCOMMITTEE ON STRATEGIC FORCES,
Washington, DC, Thursday, April 25, 2013.

The subcommittee met, pursuant to call, at 3:35 p.m., in room 2212, Rayburn House Office Building, Hon. Mike Rogers (chairman of the subcommittee) presiding.

OPENING STATEMENT OF HON. MIKE ROGERS, A REPRESENTATIVE FROM ALABAMA, CHAIRMAN, SUBCOMMITTEE ON STRATEGIC FORCES

Mr. ROGERS. Good afternoon. This hearing of the Strategic Forces Subcommittee of the House Armed Services Committee is called to order. I want to welcome everyone to the Strategic Forces hearing on the fiscal 2014 budget request for the national security space activities.

Our distinguished panel of experts this afternoon are General William Shelton, Commander of Air Force Space Command; Ms. Betty Sapp, Director of NRO, National Reconnaissance Office; Mr. Gil Klinger, Deputy Assistant Secretary for Defense, Space and Intelligence Office; and Mr. Doug Loverro, Deputy Assistant Secretary of Defense for Space Policy.

I appreciate your time in being here and the time it took to prepare for this hearing. It is important and very helpful to us for you to be able to participate.

Space is a critical element of our national security in both peace and wartime environments. I am very concerned of the impact of sequestration on national security space programs, and I appreciate hearing more from you during our opening statements on this issue.

Potential adversaries have taken note of our reliance on space and are developing the means to degrade, deny, and destroy our capabilities. Just like the evolution of ground, sea and air platforms, when defenses and survivability mechanisms had to be developed to keep pace with the threat, now this is happening with space systems.

I am pleased to see the Department's recognition of the threat, as evidenced by the increased investment in space situational awareness in the fiscal 2014 budget request. I remain concerned on the future implementation of space defense and resilience to include breaking up or disaggregating programs that we have invested billions to develop and are just starting to provide the nec-

essary capabilities for the warfighter. I look forward to further dialogue and study of this important topic.

Separately, I commend the Department on the significant advances it has made on many space programs. After years of massive costs and schedule overruns, we have entered a new period of stable procurement, incremental development. As noted above, I am skeptical when I hear that we now may want to break up these successful programs.

For instance, the Air Force recently reported that new block-buy strategies for Space-Based Infrared System, Advanced Extremely High Frequency Satellite, and the Evolved Expendable Launch Vehicle programs are resulting in over $2.5 billion in savings over the next 5 years. This is a tremendous success for the military and the taxpayer, and I hope to see those savings reinvested and provide the necessary modernization initiatives in accordance with the warfighter requirements.

Thank you again for being with us today, and I look forward to your testimony. Ranking Member Cooper and I have spent a lot of time together visiting the NRO and the NGA [National Geospatial-Intelligence Agency] headquarters and getting classified mission and threat briefs. We are both focused on the opportunities and threats we face.

And with that, I yield to my friend and colleague from Tennessee, Mr. Cooper, for any statement he may have.

[The prepared statement of Mr. Rogers can be found in the Appendix on page 31.]

STATEMENT OF HON. JIM COOPER, A REPRESENTATIVE FROM TENNESSEE, RANKING MEMBER, SUBCOMMITTEE ON STRATEGIC FORCES

Mr. COOPER. Thank you, Mr. Chairman.

I would just like to add my welcome to yours, and I look forward to hearing the testimony of the witnesses. Thank you.

Mr. ROGERS. General Shelton, it is all you.

STATEMENT OF GEN WILLIAM SHELTON, USAF, COMMANDER, AIR FORCE SPACE COMMAND, U.S. AIR FORCE

General SHELTON. Mr. Chairman, Representative Cooper, distinguished members of the subcommittee, it is an honor to appear before you today as the commander of Air Force Space Command. It is also my privilege to appear before you with members of distinguished colleagues and members of the national security space enterprise.

Since its inception a little over 30 years ago, Air Force Space Command has made significant progress in evolving and sustaining space capabilities to underpin operations across the spectrum of conflict. We have established three major goals to ensure these foundational capabilities are available to the warfighter and to the Nation. First, to provide assured full-spectrum space capabilities; second, to develop highly skilled and innovative space professionals; and, finally, to provide resilient integrated systems that preserve operational advantage for the warfighter.

Within the bounds of the current fiscal climate, we are managing increased risk across the enterprise, while modernizing, sustaining,

and acquiring space capabilities consistent with our national priorities. Accomplishing this in an era of declining budgets, growing threats, and increasing requirements is no small challenge. And we face a new daunting challenge, providing these foundational capabilities in an environment of sequestration.

In my command alone, I had to find $508 million in reductions for the remainder of fiscal year 2013. The chaos created by operations and maintenance account reductions this large in this short time period cannot be overstated. At the top of this list is the significant and justifiable angst of my civilian workforce facing the prospect of a 20-percent pay cut for the last 14 weeks of this fiscal year.

As we look to the future, I strongly urge your support to amend the law to create the flexibility required to enable smarter decisions. Despite our fiscal challenges, we will work together with these mission partners and with industry to find innovative approaches to providing vital space capability.

I thank the committee for your steadfast support of Air Force Space Command and our people, and thank you, Mr. Chairman.

[The prepared statement of General Shelton can be found in the Appendix on page 33.]

Mr. ROGERS. Thank you, General.

Ms. Sapp, you are recognized for 5 minutes for your opening statement.

STATEMENT OF BETTY SAPP, DIRECTOR, NATIONAL RECONNAISSANCE OFFICE

Ms. SAPP. Chairman Rogers, Ranking Member Cooper, and distinguished members of the committee, I am pleased to appear before you today on behalf of the NRO. It is an honor for me to appear alongside our mission partners from the Department of Defense. The NRO's close relationship and continuing collaboration with our DOD [Department of Defense] partners is vital to maintaining this nation's superiority in space.

I would like to begin with a few words about the state of the NRO today. First and foremost, I am proud to report that all of our major system acquisition programs are green, meeting or beating all performance, costs, and schedule goals. Additionally, for the fourth year in a row, the NRO received a clean audit opinion on our financial statements.

The NRO's all-green acquisition scorecard and clean audit record are best proof of our commitment to excellence and conscientious stewardship of taxpayer dollars. We have also continued our record of success on the launch front, launching with our partners in Air Force four systems in just 5 months last year. The missions were so problem-free that we brought most of the systems and the critical capabilities they deliver into operations ahead of schedule. This speaks, again, to our commitment to excellence and to the quality of our partnership with the Air Force.

Moving forward, the NRO is leveraging key investments in our R&D [Research and Development] and in commercial technologies to deliver a future architecture designed to improve persistence, to better our performance against hard targets, resilience in the face

of increasing threats, and affordability in the face of current and likely future budget constraints.

As General Shelton mentioned, the current fiscal year is a challenge, and I want to touch briefly on the effects that sequestration is having on the NRO. Internally, we have reduced all infrastructure costs, including those directly supporting the mission. We have significantly reduced our core contractors, key to everything we do from R&D to operations. We have also had to reduce funding for our major system acquisition programs, cuts that represent increased risk to that record of acquisition success.

We are also proposing—and I stress proposing—that we terminate some of our legacy operational programs. The capability those programs provide, while important, are beyond our documented requirements. We are vetting this proposal through the community.

So while we are doing everything we can to minimize the mission impacts of sequestration, some difficult choices will have to be made and may be felt by those who count on us.

Despite our fiscal challenges, the NRO is committed to sustaining the support most critical for our warfighters worldwide. In addition to traditional NRO ISR [Intelligence, Surveillance, and Reconnaissance] capabilities, we provide a wide array of systems and capabilities integral to the highest-priority missions, including identifying, locating, and tracking high-value targets, special communications support, and counter-IED [Improvised Explosive Device] efforts.

In the counter-IED area, one of our most successful programs continues to be RED DOT. RED DOT takes all the sources of indications of warnings available, combines them into an integrated picture, then sends that site picture out directly to the tactical user to include the HMMWV [High-Mobility Multipurpose Wheeled Vehicle] on patrol. Last year alone, RED DOT indications resulted in the find and removal of 235 IEDs from the battlefield, a huge success for the program and a real lifesaver for our men and women in harm's way.

In summary, the NRO remains committed to maintaining our record of acquisition and mission success, while also delivering a more persistent, resilient, and affordable future architecture. I would be happy to follow up with you for more detailed discussions as to how our systems directly support our warfighters and the national security of the United States.

I want to thank the committee for the support you have shown me and the men and women of the NRO. Thank you again for the opportunity to be here today.

[The prepared statement of Ms. Sapp can be found in the Appendix on page 53.]

Mr. ROGERS. Thank you, Ms. Sapp.

Mr. Klinger, you are recognized for 5 minutes for your opening statement.

STATEMENT OF GIL KLINGER, DEPUTY ASSISTANT SECRETARY OF DEFENSE, SPACE AND INTELLIGENCE OFFICE (AT&L), U.S. DEPARTMENT OF DEFENSE

Mr. KLINGER. Thank you, Chairman Rogers, Ranking Member Cooper, and members. It is my pleasure to be part of this distin-

guished panel representing the spectrum of disciplines that are key to ensuring the success of our space acquisition programs, from policy and governance to acquisition oversight, program execution, and, finally, to our critical partnership with the intelligence community.

In that vein, I would like to highlight the activities we have undertaken to provide a coherent, balanced national security space program that prepares for future challenges, supports our strategic guidance, and represents our commitment to accomplish these goals, while executing affordable programs, improving efficiency and execution, and strengthening the industrial base.

Last year, I testified that in fiscal year 2012, we evaluated space acquisition reform initiatives. I am pleased to report that in fiscal year 2013, these initiatives are integrated into the Department's Better Buying Power 2.0 to better manage the costs of acquisition, while achieving affordable programs. We are refining our contract strategies to incentivize productivity and innovation and to promote effective competition.

This year, a significant example of promoting competition includes the restructured, Evolved Expendable Launch Vehicle program, which will enable new commercial entrants to compete with the incumbent launch provider. We are moving forward to introduce competition as early as possible with a more efficient contracting strategy for acquiring space launch services and associated launch capabilities for the Department of Defense and the intelligence community's satellite programs. These actions resulted in an estimated savings of over $1 billion in the Future Year Defense Program, below the fiscal year 2013 President's budget, without excessive and unacceptable risk.

As we continue to consider potential alternative acquisition and procurement strategies across the national security space portfolio, we are committed to a disciplined cost approach that incorporates full funding and incremental funding. Additionally, the Under Secretary of Defense for Acquisition, Technology and Logistics and the Service acquisition executives have established affordability targets for the majority of our large critical space programs.

We are also assessing how to take better advantage of commercial opportunities. We will continue to pursue more production-oriented processes and quantities as part of each overall mission architecture. This approach may result in greater affordability and reduced time to fielding in the future. Your authorization in fiscal year 2012 to incrementally fund up to 6 fiscal years to procure two Advanced Extremely High Frequency satellites and your fiscal year 2013 authorization to fund two Space-Based Infrared System satellites are reflected in the fiscal year 2014 President's budget.

As you know, we are committed to balancing the modernization of mission capability with the associated risks, both in acquisition and operations. It is paramount that we deliver the capabilities the warfighter will need in the future, given the evolving threats. The 2014 budget proposal increased investments over last year in the Space Modernization Initiative for missile warning to inform future acquisition decisions and anticipate evolving threats.

Also, the savings from the Advanced Extremely High Frequency fixed-price strategy will support continued Space Modernization Initiative research and development activities. Excuse me.

The Department is implementing various Better Buying Power initiatives to make GPS [Global Positioning System] more affordable and to ensure we sustain this critical global utility. These include a modified acquisition strategy for the current buy of GPS III satellites five through eight from a cost-plus to a fixed-price contract to limit risk to the Government and encourage the prime contractor to implement cost-cutting measures.

In fiscal year 2014, the Department's budget proposal requests funding for an assessment to determine if we can accelerate the military GPS user equipment program and funds the development of the next-generation operational control system. Both are required to enable a new military signal to further improve our GPS anti-jamming capability.

I am pleased to report in fiscal year 2012 we completed the architecture studies for resilient-based satellite communications, space control, and overhead persistent infrared capabilities. These studies helped the Department frame potential decision points for follow-on capability, including alternatives to extend production for current programs.

In calendar year 2013, the Defense Space Council is providing the senior steering for ongoing analysis of alternatives for space-based environmental monitoring, space situational awareness, and protected satellite communications. The capabilities we are considering include commercial augmentation, international cooperation, hosted payloads, and other key changes to the way we have done the space business in the past. All of these initiatives are included in our second submission of the 15-year space investment plan.

Finally, thank you for your continued support. Overseeing space acquisition requires a constant steady hand over a long period of time. We appreciate your willingness to engage with us as we consider all of the ramifications of the various architecture alternatives, business models, and industry impacts we are addressing to provide a space capability that addresses warfighter needs, prepares for future challenges, looks after the broad range of our taxpayer—of our national security interests, and protects the United States taxpayer.

I look forward to reacting to your questions.

[The prepared statement of Mr. Klinger can be found in the Appendix on page 63.]

Mr. ROGERS. Thank you, Mr. Klinger.

And, Mr. Loverro, you are recognized for 5 minutes for your opening statement.

STATEMENT OF DOUG LOVERRO, DEPUTY ASSISTANT SECRETARY OF DEFENSE, SPACE POLICY, U.S. DEPARTMENT OF DEFENSE

Mr. LOVERRO. Thank you, Chairman Rogers, Ranking Member Cooper, and members of the subcommittee, thank you for the opportunity to testify this afternoon.

A year ago, Ambassador Schulte testified here about the Department's progress in implementing the national security space strat-

egy. I am pleased to join General Shelton, Ms. Sapp, and Mr. Klinger to continue that discussion today.

Let me start with the basic reality that space remains vital to our national security. But that evolving strategic environment increasingly challenges U.S. space advantages, advantages that both our warfighters and our adversaries have come to appreciate. As space becomes more congested, competitive, and contested, the Department must formulate programs and policies that will secure those advantages in the years to come.

That reality is juxtaposed with the fact that as a nation, we are providing these capabilities in an environment that is increasingly cost-constrained. The growing challenges of the budget, in addition to the increasing external threats, compel us to now think and act differently so that in the future what we choose to procure and how we choose to provision it reflect both the changed threat and fiscal environment.

While these two realities present a clear challenge, I do not by any means view them with a sense of doom or gloom. New entrepreneurial suppliers alongside our legacy suppliers are creating an ever-burgeoning commercial space market that can provide a significant advantage to the DOD if we formulate the policies and strategies to encourage their growth and use.

Similarly, there has been a growth worldwide in allied space investment in capability, and that provides significant opportunities for the DOD to help us build resilience into our space capabilities. The policies and strategies that I will discuss today begin to address these challenges and opportunities, but they are just the initial steps in an area that will continue to demand attention and action from us all.

Thank you, and I look forward to your questions.

[The prepard statement of Mr. Loverro can be found in the Appendix on page 72.]

Mr. ROGERS. Thank you. I thank all of the witnesses.

We will now go into the question period of our hearing, and I will start off first with General Shelton. An effective and affordable space launch program is an essential capability for the military. Please describe the policy for assured access to space and how you plan to implement this policy and maintain necessary launch capability, as well as to conduct a fair evaluation during the potential future competition of certified launch providers.

General SHELTON. Mr. Chairman, as you said, this is foundational. We have got to have space launch capability, access to space. What we have decided to do is continue with our current provider, tremendous success record of United Launch Alliance. We are so proud of the operational success we have seen from them. However, launch is very expensive.

So we have opted to introduce competition, new entrants into the business. However, having said that, we want to have them certified to perform at the mission assurance standard that we have come to expect, so there is a very rigorous certification process that we will work through with these new entrants, the ones that have established a statement of intent with us that they want to have national security space launches as part of their business base.

As we look to the future in trying to provide this level playing field, this competitive playing field that is fair and equitable to everyone involved, we have established a block-buy strategy where we will buy 36 cores from United Launch Alliance. We have reserved 14 core vehicles for competition. United Launch Alliance, as well as certified new entrants, can compete for those 14 launches.

That level playing field will be interesting to define, and we are working through that right now. And the reason for that is, we have decided to provide a launch capability with United Launch Alliance that provides for the infrastructure, provides for the operational crew force, provides all those baseline capabilities that are necessary to have a space launch capability, and then buy individual boosters, booster by booster.

There is much more than just the booster cost, obviously, in each space launch, so deciding how to allocate those across-the-board capabilities in a per-launch basis will be a challenge for us, but that is our strategy, that is our way ahead.

Mr. ROGERS. What is the timeline on that certification process?

General SHELTON. It actually depends on each provider, sir. As they have launches, as they work through the certification process with us, it is up to them. It is up to them to have whatever pace they would like to have.

Mr. ROGERS. Okay. And, General Shelton, would you consider the ELC [Evolved Expendable Launch Vehicle (EELV) Launch Capability] a subsidy?

General SHELTON. No, sir.

Mr. ROGERS. Why not?

General SHELTON. It is an efficient way to do business when we have got a single launch provider, because it gives us the operational flexibility we need, it gives us the ability to exchange crews between East Coast and West Coast. It just provides that foundational level that we need across the entire enterprise.

Mr. ROGERS. Thank you.

Ms. Sapp, can you provide your perspective on the importance of maintaining a launch capability and, in general, the unique requirements of the NRO?

Ms. SAPP. Yes, Mr. Chairman. We do rely on Air Force to provide a launch capability for us. We definitely leverage their efforts. The NRO is reliant on ULA [United Launch Alliance] right now, just as the Air Force is. We are doing our own certification, again, in a very cooperative way with the Air Force for other providers. We would hope that they are ready by fiscal year 2015. We were actually on contract today with SpaceX for a smaller mission, but we would expect them to compete for a mission we have in 2015.

We are certainly the ones who use the West Coast most often. And we are certainly the ones who use heavy lift most often. So, again, we rely on what the Air Force provides in the way of launch capability.

Mr. ROGERS. Thank you.

Changing topics, Mr. Loverro, are you aware of any commercial satellite services the Department procures in which the People's Republic of China has significant ownership interest?

Mr. LOVERRO. Yes, Mr. Chairman, I am. We do lease some satellite services from some Chinese companies right now to support

JUONS [Joint Urgent Operational Needs Statements] that were issued by some of our operational commanders early last year.

Mr. ROGERS. Do you see reasons why we should be concerned about that?

Mr. LOVERRO. Mr. Chairman, I became aware of these leases as I assumed this new post about a month ago. We initiated discussions with DISA [Defense Information Systems Agency], with the Joint Staff on better ways to go ahead and manage that capability and decisions to enter into those arrangements. We are looking forward to, in fact, coming out with a process that would go ahead and examine those closely as we move forward.

Clearly, we have to go ahead and balance operational need with the security arrangements there. In the case of this particular lease, it was the only lease available to support the operational need, but we also recognize that we need to have a good process to assure this is vetted across the Department.

Mr. ROGERS. Great, thank you very much. The chair now recognizes the ranking member for any questions he may have.

Mr. COOPER. Thank you, Mr. Chairman.

The elephant in the room—and maybe I should say, in the interest of bipartisanship, also the donkey in the room—this startling statement from General Shelton on page 16 and 17 of his testimony, when he said, quote, regarding sequestration, "The chaos created in my command by operations and maintenance reductions this large in this short time period cannot be overstated." Then he goes on to say that, "The rigidity in the law dictates that we must cut every appropriated line item in our budget, severely restricting our trade space. I strongly ask for your support for the reprogramming actions that will be needed to enable smarter decisions."

When I hear chaos in any military program, I get worried. And I want to give my colleagues a heads-up—and this doesn't have to be my amendment—but I would encourage my colleagues to jointly work together to figure out some way of granting flexibility here so that we do not create chaos in an extremely important branch of our military or in the—similar problems are being felt throughout the military as a whole.

This does not suggest reducing the amount of cuts. It is just allowing some flexibility. Whether it is in the form of reprogramming or in other ways, I think this is an urgent national priority. And I just appreciate General Shelton, by having put it in clear language, although it was way back on page 16 or 17 of the testimony, that we really need to consider flexibility.

And, of course, the usual committee procedure would be to wait for the NDAA and the markup process and—I am even thinking that perhaps this should be a standalone effort to go ahead, because, you know, tomorrow, we will vote on the helium reserve. You know, today we quit work at, what, 1:30 in the afternoon? You know, there has got to be a more timely way to address this problem, again, not reducing the amount of the cuts, but granting the necessary flexibility so that we are not creating chaos in the space service or other parts of our military.

So just a quick heads-up. It doesn't have to be my approach. I would be honored to co-sponsor an approach sponsored by the ma-

jority. But there has got to be a way to minimize the effect of sequester on the Pentagon.

So, thank you, Mr. Chairman. I appreciate the opportunity to put in my two cents' worth. And I don't know if General Shelton wants to add to that, but you made this most clear in your testimony.

General SHELTON. Thank you, sir. And you are exactly right. It is not so much the level of the cut—although none of us want to take cuts—but it is the rigidity in the law that requires every line item to be cut. So it gives you no opportunity to make smart trades. We just have to take the cuts as mechanically assigned.

Mr. ROGERS. And I thank the gentleman, and I agree with his concerns and would like to see something done. I will be talking with the full committee chairman and seeing if there is anything intended during our upcoming activities.

But with that, we will turn to Mr. Lamborn for any questions he may have.

Mr. LAMBORN. Thank you, Mr. Chairman.

General Shelton, I want to ask you about the joint mission systems program, which is an important program, since it is responsible for tracking and analyzing our space assets. I know this program has had some challenges. It is difficult to replace and upgrade the old, fragile system. This committee has strongly supported using commercial technology to upgrade the system faster and to save money, and I understand the Air Force is now starting to incorporate commercial software solutions.

But I am concerned, after reviewing the proposed budget request, that there appears to be some slippage and delay in integrating commercial technologies. Can you tell me where you stand on this? And could you provide me an update and a briefing personally in the next couple weeks on how we can accelerate this process?

General SHELTON. Yes, sir. I would be glad to provide the briefing. But as you may recall, what we have designed here is a very open architecture system, taking advantage as we can of not only Government off-the-shelf software, but also commercial off-the-shelf software. We are now on contract with two providers of that commercial off-the-shelf software to provide some very interesting capability for both visualization and computational power.

So this is the system that provides the foundation for space situational awareness. It will in the future, once we get all the capabilities included, give us the ability to fuse all sorts of data from disparate sources, so it is not just the dedicated Government space surveillance capabilities, but we can also ingest data from commercial providers, from potentially other governments, allies, so on and so forth. So we are very happy with where this is going. We would like for the pace to be a little bit faster. We are subject—it is almost a level of effort kind of build to funding, if you will, kind of program.

So as we take cuts like we did from the HAC [House Appropriations Committee] this last year, it adjusts the program downward a little bit, slows it down a little bit, but we will come back up on plane here very shortly with the program.

Mr. LAMBORN. Okay, thank you very much.

Mr. Loverro, the Department proposed to terminate the Operationally Responsive Space program again in fiscal year 2014. The

threats to our space systems are real, and ORS [Operationally Responsive Space] has streamlined acquisition capabilities to address urgent warfighter needs. Congress has expressed the importance of this program, both in law through the 2007 NDAA [National Defense Authorization Act], and most recently in the 2013 authorization and appropriations acts, which provided funding for ORS, despite the Department's request to cancel it.

How does the Department plan to address the needs that are intended to be met by Operationally Responsive Space?

Mr. LOVERRO. Thank you, Congressman. The Department clearly got the Congress's message on ORS. We have, as directed in legislation, stood—formed our executive committee, led by the Secretary of the Air Force in his role as the executive agent for space, and that charter has now been promulgated through the Department.

We have moved the ORS office that was still in existence under the Space and Missile System Center, under Air Force Space Command, under General Shelton's leadership. We recognize that, obviously, in budget—because of budget restrictions, there were still choices that needed to be made in terms of where we were going to take money from, and yet we also recognize the value of ORS as part of that resilient strategy that we talked about.

We are working now to go ahead and figure out how we would make it a better part of that strategy and how we go ahead and reformulate the program to address those needs.

Mr. LAMBORN. Okay, thank you.

And lastly, General Shelton, real quickly here, GPS jamming remains something that we have to be very concerned about. As a result, Air Force has been developing the next generation satellite constellation, GPS III. Can you give us a status report on this and how many GPS III satellites the Air Force would like to procure?

General SHELTON. Yes, sir. We are in contract right now—as Mr. Klinger said in his opening statement—we are on contract through satellite vehicle number eight. Satellite vehicles nine and beyond, the acquisition strategy for that will be debated in the fall, and his office will be right in the middle of that.

But we have got a very active GPS III program, that we are proud of the progress of it, and we will continue to look to the future on what is beyond the contracted one through eight.

Mr. LAMBORN. And is it better to continue that, as opposed to starting a whole new fourth generation?

General SHELTON. That is the decision we will have to make in the fall. It seems like the answer would be yes, but we will study that.

Mr. LAMBORN. Okay, thank you very much. I yield back, Mr. Chairman.

Mr. ROGERS. I thank the gentleman.

The chair now recognizes the gentleman from California, Mr. Garamendi, for 5 minutes.

Mr. GARAMENDI. I thank you, Mr. Chairman, and I thank the panel for all that you do in a very complex arena.

In a hearing last week, the issue of ISR came up. You probably have heard about it. I think I said it seems to be confused as to exactly what the Air Force wants to do, what the Navy wants to do, maybe reconnaissance, also. I am not asking for the answer

here, but we really need to get into a comprehensive understanding of what exactly we need to do.

Ms. Sapp, you raised one of the issues that would come out of it, and that is the current work that is being done in Afghanistan. It appears as though the assumption is that the assets that are currently used in Afghanistan won't be needed in the future. And everything I hear from others is that that is not likely to be the case.

So my point here is that we need to understand and the confusion that is apparent from the various elements of the ISR community need to be integrated and fully understood, because we are likely to make the wrong decision here based upon the confusion that we are being presented with. So I will let that go at that.

There are a series of questions. I want to go to Mr. Loverro. In your response to the China issue, your response was incomplete. What exactly were you talking about, if you can answer the question here?

Mr. LOVERRO. Congressman, I am not sure exactly which part is incomplete, but let me try to restate it and maybe you will help me along. We are—we recognize that there are concerns across the community on the usage of Chinese satellites to support our warfighter, and yet as I expressed, we also recognize that our warfighters need support and sometimes we must go to the only place that we can get it from.

All of the correct procedures were followed in putting those leases together. We reviewed all the security concerns, all of the business concerns with such a lease. Those were presented to the operational commander, who understood those—all the encryption necessary to protect U.S. information was put into place.

So from that perspective, I am very pleased with what we did. And yet I think the larger issue is, we don't have a clear policy laid out on how do we assess whether or not we want to do this as a Department, as opposed to just a response to a need. And so what we have decided with DISA and with the Joint Staff is that we would look at how we put together a process to do so.

I can't tell you any more on what that process will involve, because we just decided on this literally a week-and-a-half ago.

Mr. GARAMENDI. I think you just supplemented my point about confusion. I should ask you exactly, what was it that the warfighters needed? And why didn't we have it?

Mr. LOVERRO. Congressman, I can't tell you why we didn't have it. What I can tell you is that the warfighter needed SATCOM [satellite communications] support in his area of operations. He went to the Defense Information Services Agency to request that support. In their process, they send out bids to their multiple providers. I think they have 17 on contract. I am not certain of that number, if you will let me correct that later if I need to.

They went out to their providers. Only one provider was able to respond to the need. That is to say, only one provider had bandwidth available in order to go ahead and give them, and that bandwidth's available only on a Chinese satellite. And so that is the communication capability that DISA presented to the operational commander, who understood what was involved, how it was being handled, and accepted that to meet his need.

Mr. GARAMENDI. I thank you for the completeness of the answer and the confirmation of the need for us to have full understanding of the ISR requirements, whether they are satellite, ground-based, or UAV [Unmanned Aerial Vehicle], or manned. We are being asked to make significant changes, but there doesn't appear to be a comprehensive understanding or vision of what is needed. So we will go with that.

I am going to yield back my remaining 42 seconds, Mr. Chairman. Thank you.

Mr. ROGERS. I thank the gentleman.

The chair now recognizes the gentleman from Colorado, Mr. Coffman, for 5 minutes.

Mr. COFFMAN. Thank you, Mr. Chairman.

General Shelton, as I understand it, the current EELV [Evolved Expendable Launch Vehicle] provider, United Launch Alliance, meets the full spectrum of capabilities across the EELV manifest as outlined by the operations and systems requirements. Will new entrants be required to provide launch services across the full spectrum of EELV launches, even the most heavy and complicated mission payloads, as the incumbent provider currently does?

General SHELTON. Congressman, that is the going-in position. That is not to say that that won't change, but the going-in position is that the new entrants would have to come with that full suite of capability, but as we compete for those 14 launches in the future, those will be launch by launch. So as we work through those, it could be that it is not a full capability across the board.

But that is our going-in position. We want to have—we don't want to have a launch provider that is just in one little niche. We want them to have the full segment of capability.

Mr. COFFMAN. Well, then do you believe that having a system that doesn't require the full spectrum creates an uneven playing field for the incumbent, given that they must maintain capabilities and costs across the entire spectrum?

General SHELTON. That remains to be seen, sir. I mean, we will have to judge that at the time, because there could be a host of providers that cover the full spectrum. It is all about assured access to space and mission assurance, so we are just going to have to work our way through this as this matures.

Mr. COFFMAN. Okay. General Shelton and Mr. Klinger and Mr. Loverro, through the Enhanced View program, commercial space imagery is utilized to provide rapid delivery of mission-critical, unclassified imagery for U.S. and coalition partner missions. This is the only source of unclassified high-resolution imagery that can be immediately disseminated and shared with U.S. and coalition partners. This program was cut by 50 percent in fiscal year 2013, and now there is only one U.S. vendor supplying this imagery.

Will you support stable funding of the remaining portion of the contracts so that this extremely valuable capability is not lost or weakened? Why don't we start with General Shelton?

General SHELTON. Sir, I am going to have to let someone else answer that question.

Mr. COFFMAN. Okay.

General SHELTON. That is really not in my area.

Mr. COFFMAN. Mr. Klinger.

Mr. KLINGER. I think, overall, we certainly support stability in funding that program, but with—as you understand, Congressman, with sequestration going on and the fiscal environment, budgetary environment that we are in, many things are under review right now, so there is no question that we support the President's budget at this point, which provides for the continued services of that one provider. We will just have to see in the ensuing months how this develops.

Mr. COFFMAN. Mr. Loverro.

Mr. LOVERRO. Congressman, a little bit out of my wheelhouse in this particular issue. I certainly agree with everything that Mr. Klinger just said. Clearly, Enhanced View provides a capability to the warfighter. Again, we have to go ahead and examine in this budget environment how we maintain that capability into the future. I don't think I have anything else to add to that.

Mr. COFFMAN. Okay. General Shelton, maybe you can answer this. How did the Air Force determine what satellite payloads to set aside for competition? And which programs were part of the ULA block buy?

General SHELTON. Sir, the only ones we have actually set aside so far are two that are really more research and development, science and technology kinds of efforts, and we felt like we could perhaps take a little bit more risk. So rather than our—one of our mainstream programs, which is very critical to national security, we could set aside these couple of efforts here and assume just a little bit more risk.

And the advantage of that, of course, is furthering the competition in new entrants and so on and so forth.

Mr. COFFMAN. General Shelton, will the future EELV launch providers be required to comply with data requirements and cost accounting standards of similar programs and included certified cost or price data to protect the taxpayers' interest?

General SHELTON. Yes, sir. They would be held to the same standards.

Mr. COFFMAN. Okay.

Thank you, Mr. Chairman. I yield back.

Mr. ROGERS. I thank the gentleman.

The chair now recognizes the chairman emeritus of the committee, Mr. Turner of Ohio.

Mr. TURNER. Well, thank you, Mr. Chairman. I appreciate that, yes. Thank you. Mr. Garamendi just pointed out that that translates to "has-been." I don't know.

[Laughter.]

Thank you for that vote of confidence.

Before I ask my question, I just wanted to say one thing on the ranking member, who I have a great deal of respect for. We are going to have significant amount of debate here on sequestration and what needs to occur. I, for one, as many of this panel are aware, because I frequently pointed out, I voted against this mess because I was afraid we would be right here, right where we are, in a stalemate without any solution.

But I want to caution against a rush to provide flexibility, because as the ranking member stated, it would not reduce the amount of cuts—and I am very fearful that we would be in a time-

frame—in a time where the sequestration number becomes the new norm. And many of the cuts that sequestration are going to inflict are not going to result in savings. They are actually going to result in increased costs later.

And my concern is, as we just heard from the commandant of the Marines and General Odierno today, that both of them state that at the sequestration numbers, that they would be unable to have confidence of success in one major conflict where our national strategy has been frequently two.

So although, you know, I certainly agree that what is occurring is wrong and should not be done, I know we are going to be receiving—and I don't want to give the General chills—as we are going to be receiving a major request for reprogramming, I certainly think that level of cooperation between Congress and DOD and the Pentagon needs to occur, but a broad flexibility, I think, would impose that number, which I think is the wrong number on the Department of Defense. So as that debate continues, I just want to caution there.

General Shelton, the Department has made very significant improvements in Overhead Persistent Infrared, or OPIR. And the newest Air Force satellite, satellite Space-Based Infrared Systems, SBIRS, doing amazing work, as we all know, in the—what is highly needed in the area of missile warning, missile defense, battle space awareness, and technical intelligence. Last year, we included in the NDAA a provision requesting information on the exploitation of that information. Specifically in section 915, we asked for an assessment of whether there are further opportunities for the Department of Defense and the intelligence community to capitalize on increased data-sharing, fusion, interoperability, and exploitation.

My question goes to, have you seen some successes in that cooperation and the sharing of that information the like that our committee was hoping would occur? And also, if you could indicate any role that you see that NASIC [National Air and Space Intelligence Center] plays in that area of sharing that information, thank you.

General SHELTON. Yes, sir. NASIC has been at the forefront of OPIR exploitation for quite some time. In fact, the National Geospatial-Intelligence Agency has designated them as the center of excellence for that kind of work. We turn to them for not only new ways to apply that data, but also the exploitation of that data to look at—to identify new types of missiles to provide what we call templates for those missiles so that we can quickly identify, when one of those missiles launches, we can say that is that type of missile. That is the work that goes on at NASIC.

There has been incredible sharing between Ms. Sapp's people, our folks, NASIC, cooperating across the board to further the ability of us to exploit this wonderful data that is coming off SBIRS. And we have not even scratched the surface, I think, of the potential that is there.

We have another sensor that we haven't fully exploited yet as part of that satellite. We are doing a good job on the scanning sensor. The staring sensor, which has much better fidelity, we really haven't fully wrung out yet, because we have been so focused on getting the scanning sensor calibrated and certified.

So I think NASIC is going to be right in the forefront of that and the cooperation between us, Ms. Sapp's people, the NGA people, I think, is going to just further that effort.

Mr. TURNER. Well, General, on a personal note, I told you before this hearing, I know the members of this committee and myself personally greatly appreciate your strong voice and your highly substantive expertise. You have been a great assistance to this committee, as we have looked to, you know, what is really occurring and how do we need to respond, and thank you for your personal dedication.

Mr. ROGERS. The gentleman yields back.

The chair now recognizes my colleague from Alabama, Mr. Brooks, for 5 minutes.

Mr. BROOKS. Thank you, Mr. Chairman.

I would like to echo some of the comments of my good friend from the State of Ohio, Congressman Turner, and his comments concerning sequestration. While flexibility is good, proper funding for national security is better. The President's sequestration idea, which was promoted by the Republican House leadership, the Democrat Senate leadership, and a majority of the Democrats in Congress and a majority of the Republicans in Congress, quite frankly, is, as the President said in his State of the Union, a bad idea.

It is inappropriate to make national defense absorb over 60 percent of the cuts in the Budget Control Act, when it is only 16 percent, 17 percent of total Federal Government spending. That is not proper prioritization, in my judgment. And as an aside, that is why I voted against the Budget Control Act in August of 2011.

Having said that, General Shelton, quick question for you. Does the current Evolved Expendable Launch Vehicle provider meet the full spectrum of capabilities across the EELV manifest as outlined by the operations and systems requirements, which in turn are as articulated in the operational requirements document and systems requirements document?

General SHELTON. Easy answer, sir, and that is yes.

Mr. BROOKS. Will any new entrants into this market be required to provide launch services across the full spectrum of EELV launches, even the most heavily and complicated mission payloads, as the incumbent provider is so required?

General SHELTON. Yes, sir, that is our going-in position. However, as we work our way through this and we look at the ability of new entrants to compete for launches, we may adjust that strategy. But our going-in position is they will have to meet the full spectrum.

Mr. BROOKS. Well, if new entrants are allowed to ignore some elements, does that create an uneven playing field, in your judgment, for the incumbent provider who must maintain capabilities across the full EELV spectrum and those added costs associated with those added stringent requirements?

General SHELTON. Yes, sir, that is something we are going to have to assess as we go.

Mr. BROOKS. On a different issue now, General Shelton, the Air Force currently launches all of its major satellites in a single launch configuration, but this year's budget includes a request for development of a dual-launch capability for the GPS mission. Why

is this important to the Air Force? And what are the anticipated savings or advantages?

General SHELTON. Yes, sir, this is all about lowering launch costs, so if we can put two GPSs together on a little bit bigger booster than what we launch on today, we believe that there will be a significant savings. I can't give you a dollar figure right off the top of my head here, but I could get that for you.

We believe that that will be the best way to launch GPSs in the future. And we are talking about GPS III satellite vehicle nine and out. The die is already cast one through eight, but nine and out, that is what we are looking at.

Mr. BROOKS. And this next question is for the full panel, whomever may wish to jump on it. As many of you are aware, we have considerable reliance on liquid rocket technology from decades ago. While our EELV launch program is extremely successful, it stretches the performance to the limits of what the engines were designed for. Should we be prioritizing efforts for liquid rocket engine development? And if so, is the greatest need in the upper stage or main engines? And lastly, how is the Department working with NASA [National Aeronautics and Space Administration] to ensure scarce resources in this area are properly utilized?

Mr. KLINGER. Congressman, the Air Force is reviewing the terms offered by ULA in the block-buy strategy to determine the optimum contract terms for annual quantity buys. And what that is doing is stabilizing the supplier market for liquid rocket engines. In addition, the new entrant, the onset of competition and the prospect of competition is also stimulating some work in the industrial base.

We have needs for both main stage and upper stage, and I will be glad to take for the record to provide you a more detailed answer. We do also work very closely with NASA on a number of fronts, and both Ms. Sapp's organization, General Shelton's organization work in strong partnership with NASA on issues such as the liquid rocket industrial base.

Mr. BROOKS. Thank you, Mr. Chairman. I yield back the remainder of my time.

Mr. ROGERS. I thank the gentleman.

The chair now recognizes my colleague from Texas, Mr. Veasey, for any questions he may have.

Mr. VEASEY. Mr. Chairman, thank you very much. I appreciate that.

And just wanted to just talk with you about the—looking forward in the future, about what we need to be doing to make sure that we maintain, I guess, superiority as far as space is concerned, from a defense standpoint. I know that, you know, we are always concerned about other countries developing technologies rapidly and quickly. And, like, where are we at as far as space and defense and how that all relates versus other countries that may be also trying to develop these same sort of strategies that we have or technologies that we have? And anyone that can answer the question, be happy to——

General SHELTON. [Off mike.]

Mr. LOVERRO. Thank you, General Shelton.

Congressman, yes, this is—you know, as you know, in the space policy promulgated in 2010 by the President and the national space

security strategy that we published a little bit later in 2011, we recognized fully the growing concerns in threats to our space systems.

I think we have a multifaceted strategy to go ahead and deal with those across the lines of industrial competitiveness, some of which we have already talked about in the launch market, but just as thoroughly in the satellite side, as well, resilience efforts, trying to go ahead and make sure that our architectures are adjusted as we move to the future to be far more resilient against any enemy attacks, protection efforts that we can't necessarily talk about in here, but that we are looking at for all of our space systems, and then, quite frankly, and probably most importantly, the space situational awareness efforts that General Shelton has already mentioned to make sure we understand what is going on in space, and those we feel are foundational to the protection of our space systems and clearly one of the strongest parts of our investment going forward.

All of those come together to try to address the concerns that we see in the future from adversary nations. Clearly, we are at the beginning of this endeavor. And I think we will be happy to talk to you more about those as we move forward.

Mr. VEASEY. Just out of curiosity, are there other countries outside of obvious places like China that may also be competing in this arena that we may not be aware of? Or not—I say that we may not be aware of, that may not be talked about as often as, let's say, what is going with our—you know, competition with the Chinese on just about everything?

Mr. LOVERRO. Yes, Congressman. I don't want to go ahead and go into specifics here today, if you will allow me——

Mr. VEASEY. Okay.

Mr. LOVERRO [continuing]. Come back and give you a clearer view, but we are aware of most activities across the world in this regard.

Mr. VEASEY. Okay, thank you.

General SHELTON. Sir, if you would let me follow up, if you consider our military operations for the last 21 years, 22 years, since 1991, we have been in major combat operations sustained over that time. Other nations have had the opportunity to go to school on us. They know how involved we are with space capabilities, how integrated they are, and it is a nice way to asymmetrically challenge us and our combat capabilities.

So it doesn't take a whole lot of imagination to figure out what they might be up to in terms of space capabilities and what they would do to our space capabilities, given the opportunity. So it is a large concern of ours, and it is clear to us that not only with the budget challenges, but with the increasing threats, the status quo just won't do.

Mr. VEASEY. Thank you.

Thank you, Mr. Chairman.

Mr. ROGERS. I thank the gentleman.

The chair now recognizes my colleague from Florida, Mr. Nugent, for 5 minutes.

Mr. NUGENT. Gentlemen, thank you for being here. And, General, thank you so much for your service, and Ms. Sapp, too, we ap-

preciate it. And I know Mr. Loverro was also in the service. We appreciate all of you.

And particularly as we talk about space—and Mr. Veasey hit on China in regards to—you know, they have taken some proactive actions in regards to showing that they have at least the capability or the intent to neutralize satellites in space. In an unclassified setting, could you tell me a little bit about how we think we are going to be—and you talk about resiliency—how we going to react to that? And is there a "red line" in regards to their actions?

General SHELTON. Well, I will start. Red lines are policy questions, so I will have to punt that to Mr. Loverro. But in terms of how we react, we can't get into much detail here, but let me talk about the threat for just a second.

If you go back to 2007, we saw the Chinese very successfully test an ASAT [anti-satellite] capability. That is not easy. Technologically, that is not easy. That is literally a bullet with a bullet, and they did a very good job. Unfortunately, they generated tens of thousands of pieces of debris at the same time, and I would call that polluting the low-Earth orbit, which makes operations for some of our mission partners quite a challenge.

So I think we need to pay very close attention to activities there. I think there are technological capabilities that have been revealed there that we need to pay attention to.

Mr. NUGENT. And it is not only the kinetic, obviously, but we have issues in regards to the nonkinetic ability. The GAO [Government Accountability Office] annual report hit on a duplication overlap and fragmentation of space launch acquisition process for NASA and DOD, that they are not formally coordinated, that they may duplicate one another and may not really fully leverage our ability in our investment for space exploration, but also space defense.

What are we doing to—and this could go to any one of you—what are we doing to work with NASA to see that we are getting the best bang for our buck?

Mr. KLINGER. Congressman, we believe that we work very closely throughout the Department of Defense with the intelligence community, with Ms. Sapp's organization and Air Force Space Command and the corporate Air Force, along with NASA, on a whole range of fronts. We have extensive R&D cooperation in the propulsion area. We combine efforts—the new entrant certification guide that you heard General Shelton talk about, which underpins competition, was actually jointly developed by NASA, the Air Force, and the NRO, so it is a combined activity.

So we think there is actually a high level of cooperation in those areas where cooperation makes the most sense. We don't think there is unnecessary overlap amongst the different efforts. We do think there are places where requirements—our mission requirements legitimately diverge, the best example being NASA's requirement for human rating, and that imposes a level of requirements that is somewhat different and arguably more stringent in certain ways than are the requirements associated with the satellite launch—the booster programs that support the satellite launches that we provide, but we believe that there is a high level of cooperation ongoing on a number of fronts on a routine basis.

Mr. NUGENT. So that report—obviously, you know, GAO puts out reports that are somewhat broad-brushed. And you didn't see anything that would heighten our attention to it, in regards to waste? I mean——

Mr. KLINGER. I did not, sir.

Mr. NUGENT. Okay.

General.

General SHELTON. I would just say that I believe that—at its basis—they would advocate for a single contractual vehicle, and I just don't think that is very realistic.

Mr. NUGENT. Possible.

General SHELTON. I mean, as Mr. Klinger said, there is a tremendous amount of cooperation among the space partners in this Government. So it doesn't concern me.

Mr. NUGENT. I appreciate it. Appreciate your comments, and I yield back.

Mr. ROGERS. I thank the gentleman.

The chair now recognizes himself for a second round of questions. General Shelton, I believe we both agree on the level of threat to our space systems and the need to develop necessary space defenses and a resilient architecture. But there seems to be a significant focus on the disaggregation as the solution to address this. To what extent has DOD validated the assertion that disaggregated architectures offer greater resiliency, operational efficiency, and/or cost savings?

General SHELTON. Mr. Chairman, those studies are under way right now. We haven't leapt on that bandwagon yet, but it appears to us, from the results that we have seen so far, that there is an advantage to disaggregation. As I said earlier, with the budget reductions that are here upon us now, with the threat that is here upon us now and further developing, there is a recognition that the status quo is just not adequate.

So we have to do something for sure to—even if the budget was restored, we have to do something for sure to address the threat. And part of that solution set that we have come to thus far has been, let's disaggregate these large, monolithic satellites into less complex, smaller satellites, and at least complicate the targeting calculus for an adversary.

So that is what we are about. We are still studying these things. We haven't made any decisions yet, but it sure looks promising.

Mr. ROGERS. Ms. Sapp, what are your thoughts on this resiliency issue and disaggregation in particular?

Ms. SAPP. I think it is very mission-specific, in terms of what the satellites are supposed to be doing for the Nation. So for us, disaggregation doesn't work as well, and we are taking steps to provide resilience through both ground measures and space-based measures, and we certainly rely on the Air Force to provide space situational awareness.

So, again, we have measures we have in place today, and certainly more we are adding in the fiscal year 2014 plan.

Mr. ROGERS. Great, thank you.

I want to talk about commercial satellites right now with Mr. Klinger and Mr. Loverro. The Defense Business Board recently finished an interesting study on commercial satellite services. The

study showed we could save money if we procure commercial satellites services more efficiently. What efforts are under way in the Department to address this issue? And we will start with you, Mr. Klinger.

Mr. KLINGER. Mr. Chairman, you are right. It was our boss, Mr. Kendall, that went to Dr. Carter, the deputy secretary, and proposed that study that turned into the Defense Business Board. Building on those results, the Department has initiated a 90-day study to determine the best way forward, and Mr. Kendall announced this a couple of weeks ago. It is a study that will be jointly led by the Under Secretary for Acquisition, Technology and Logistics and the CIO [Chief Information Officer], who has a lot of supervisory responsibilities in this area, and the focus will be on how best the Department can move forward to take better advantage of commercial goods and services in a commercial communications space area.

Mr. ROGERS. Mr. Loverro.

Mr. LOVERRO. Certainly, Congressman. I, number one, concur wholeheartedly with everything that Mr. Klinger says. This is a key area for us, as I indicated in my opening comments. The leveraging of commercial space is one of the hallmarks of how we are going to move forward, both building resilience and to go ahead and address the budget issues we have. Commercial space has grown immensely over the last two decades. We have taken advantage of them in a—in what many have considered—and I think with the report you quoted—it is not the best economic approach, and we recognize that, and we recognize that there is a need to change that.

The study that Mr. Klinger talked about, I think, is the exact right way to address the best way to go ahead and do that.

Mr. ROGERS. You know, I was troubled by the fact the report also notes that no senior official claims sole responsibility for SATCOM, and multiple DOD officials asserted ownership of key components of SATCOM. What is being done about this leadership issue, if anything? Mr. Klinger.

Mr. KLINGER. I think that is within the scope of the study, is we are not just going to look externally, Mr. Chairman, in terms of our relationship with industry, but one of the things that this study is going to look at is our internal processes both in terms of statute and policy, as well as how we are organized to manage and adjudicate commercial satellite goods and services, and that is one of the issues that will be within the scope of this 90-day study.

Mr. ROGERS. Well, good. Well, in these days of austerity, that is something that we need to be focused on like a laser.

Mr. KLINGER. Yes, sir.

Mr. ROGERS. The chair now recognizes the ranking member for any additional questions he may have.

Mr. COOPER. Thank you, Mr. Chairman.

If I could return to the topic of sequestration, I have great respect for my colleagues who also focused on this topic. And without being in any way adversarial, I would just like to point out for the record that the Commander of Space Command in his testimony said that he needed flexibility. And without having that flexibility,

we have what he described as chaos, which could not be overstated in his command.

Now, that would mean to me, trying to read in the testimony, that he needs flexibility. Now, that is perhaps not all that he would like to have—and I don't in any way want to limit General Shelton—because you are entitled to ask for more money, as well—but in your testimony, you acutely need right now flexibility. And yet that is what Congress is not providing.

So reprogramming authority would help reduce the chaos or help the command. I am for it. There are many other things I would like to have, but I don't want the best to be the enemy of the good. And in the meantime, shouldn't we be reducing chaos in Space Command?

Now, that is the flexibility issue. And I am not for holding Space Command or any part of the military hostage until I get what I want, because I want you to have flexibility now when you need it.

On the issue of more funding, I think all of us on this committee would like more funding. Right now, we don't quite know how to get it. So in the meantime, let's offer flexibility.

Now, there are ways, probably, to provide more funding. You know, the House has passed a budget—as it usually does—now for the first time in 4 or 5 years. Even the Senate has passed a budget. But we are refusing to conference the budgets, so that is our fault, and we should not punish the military or Space Command for that failure to even have a conference committee.

I hope, perhaps, one side or the other will relent and we can have a conference committee, regular order, and actually maybe agree on a budget. That would be nice. But in the meantime, we need flexibility. So let's consider granting flexibility.

I am not trying to be argumentative or hard here. I am just saying, here we have a commander who is doing an excellent job, pointing out a need. Shouldn't we on the subcommittee and in the full HASC [House Armed Services Committee] consider meeting that need? That shouldn't be too hard. And let's work on the money issue at the same time, and I hope we can get more money, because that would ease a lot of problems.

But this is an amazing situation, where we are choosing not to listen to our commanders, when they clearly express a need. We all have ears. We have got to use them and try to help out when we can, because I think this is a problem that is Congress-inflicted. It is really a self-inflicted wound. And we should not take out this disagreement on our men and women in uniform or in our valuable other agencies that, in my opinion, are doing an extraordinary job of serving the needs of the nation, even during these very difficult circumstances.

So as I say, I don't want to be argumentative. I just want us to logically try to figure out a way to solve this problem. And I appreciate the excellent job that the witnesses before us are doing.

Thank you, Mr. Chairman.

Mr. ROGERS. I thank the gentleman.

The chair now recognizes Mr. Coffman for any additional questions he may have.

Mr. COFFMAN. Thank you, Mr. Chairman. Just a quick statement. A comment to what Mr. Cooper has said. I think he raised two points.

First, I think, conferencing on the budget, I—you know, the budget is merely a blueprint to show priorities in spending. And so it is a nonbinding document. I don't know that that is important for us to conference there, but I think what is important that Mr. Cooper said is the need for flexibility. I think that I am disappointed in my colleagues on both sides of the aisle, to include the President, when they don't want to give flexibility merely to prove a point, to show how bad sequestration is in order to gain more funding or to gain a tax increase, where I think we need flexibility for purposes of national security.

We need flexibility across the board to allow Government to work. And this notion that we are going to show the American taxpayers how Government can't work by not giving them flexibility is simply the wrong path. And so I certainly second Mr. Cooper's comments when it comes to providing that flexibility.

Mr. ROGERS. I thank the gentleman.

The chair now recognizes another chairman emeritus, Mr. Langevin of Rhode Island, for 5 minutes.

Mr. LANGEVIN. Thank you, Mr. Chairman. I appreciate you holding this hearing before us, and I want to thank our witnesses for being here today, as well.

Well, let me start off by saying that I would first like to note this has been a pretty eventful week in the week of the space launch world, with the successful launch of the Orbital Sciences Antares vehicle on the practice space station resupply mission. I think we would all agree, the successful launch of Antares puts Orbital in a similar trajectory, if you will pardon the pun, with SpaceX.

And obviously, if SpaceX continues forward on its plan to build the Falcon 9 Heavy and the—and Orbital is successful, these two companies will be positioned to satisfy the Air Force's demanding requirement to have a dual-launch capability and a heavy-launch capability. In other words, if SpaceX and Orbital proceed as planned, achieving the "new entrant" criteria appears almost certain. And thus, the Government would be well-positioned to reduce their launch course radically. So—and this is before we even start to consider other entrants that could compete down the line, such as Lockheed Martin or—and ATK.

So if all of the above proceeds as planned and these new entrants are certified within 3 years contractually, my question is, how difficult will it be to move the majority of our launches to a less expensive provider? And more specifically, has the Air Force provisioned termination options within the block-buy acquisitions? And if so, how will the program comply with the Federal acquisitions regulations by which the program evaluates market research and alternative sources? And what would be the transition costs in that case?

General, let's start with you.

General SHELTON. Yes, sir. We have designed this block-buy approach with that flexibility in mind. So we have—we are committing to 36 cores with ULA preserving these 14 cores for competi-

tion. That will certainly prime the pump, so to speak, on new entrants.

So if they get certified, they can compete for those 14 launches. And then beyond the 5-year acquisition timeline for this new block buy, then it is a brand-new competition, all players involved, all certified players involved.

Mr. LANGEVIN. Okay, very good. Before my time expires, then let me turn to something else. With regard to commercial imagery, our international competitors are not letting up, as some are currently selling imagery at resolutions below what we are protecting via export controls. And others are gearing up to do the same.

So in order to sustain our industry's competitiveness, would you support a relook at commercial remote-sensing export restrictions currently listed in the section 1248 report regarding space export control policy reform? Modernization of these items, some would, I would say, would help ensure our satellite industry remains not only made in America, but also second-to-none.

Mr. LOVERRO. Yes, Congressman. Certainly, as technology marches on, we recognize the need to adjust our policies, and so we definitely would support a relook as we move forward.

Mr. LANGEVIN. Okay, I would encourage that. I think that is important.

Let me turn to this. As the Air Force and, to some extent, the National Reconnaissance Office currently fund infrastructure and other facility support costs for the incumbent provider in order to help the committee to understand the current arrangement of the contract with the incumbent, can you describe why cost-plus vehicle is in place, given the maturity of the program?

General SHELTON. I guess I don't know the basis of why—specifically why that was decided to be cost-plus.

Mr. KLINGER. Yes, I think, if we may, we would take that for the record and get you—get you a more detailed answer, Congressman.

[The information referred to can be found in the Appendix on page 85.]

Mr. LANGEVIN. Okay. Fair enough. I will take that one for the record. I see my time is about to expire, as well. I will yield back.

Mr. ROGERS. I thank the gentleman.

The chair now recognizes the gentleman from California, Mr. Garamendi, for any additional questions he may have.

Mr. GARAMENDI. Thank you, Mr. Chairman.

I would like to continue to pursue some of the questions that Mr. Cooper has raised. General Shelton, the—you have asked for flexibility. I assume that is flexibility within your domain and not—or are you talking about flexibility within the entire Department of Defense?

General SHELTON. Yes, sir. Again, the mechanics of the law, every line-item appropriation hit——

Mr. GARAMENDI. I understand.

General SHELTON. So the flexibility would be—let us make those choices internal to the Department and make prioritization decisions, as opposed to those decisions being preordained.

Mr. GARAMENDI. Okay. So it is within the entire Department of Defense budget, not just your budget?

General SHELTON. Yes, sir.

Mr. GARAMENDI. If you had the opportunity to prioritize within your budget, what would you eliminate or reduce?

General SHELTON. Well, that is a very good question. I would like to be able to—I would like to have the flexibility to line the programs up one to n, and we look across the board and determine, which programs are we going to—at the lower end of the priorities, which programs would we actually cut in terms of paying operations and maintenance bills, in terms of sustaining our acquisition programs whole.

What is being built up here—and I don't think everyone realizes this—but as you take these bites out of every program, there is a bow wave of expenses that are going to the right here. At some point in the future, these bills come due, and it may be next year.

Mr. GARAMENDI. Bow wave? Is that an appropriate term for the Air Force?

[Laughter.]

General SHELTON. It could be a term of art.

Mr. GARAMENDI. It worked. It worked. We understood it. I think you have just described the conundrum that we are going to face. All members of the House Armed Services Committee have their favorite programs, and the prioritization process, if it requires our involvement, is likely to lead to a difficult and probably a time-consuming process, which is the normal NDAA. You, I suspect, do not want to have to go through all of that, and I suspect your colleagues in the other parts of the Department of Defense don't, either.

And so I think what Mr. Cooper is probably—I will speak for him for a moment—a blanket authority to prioritize, to achieve the $85—whatever—the billion dollars that would be required, is going to result in some of our sacred cows being sacrificed.

That may be a good thing at the end of the day. But nonetheless, therein lies the problem that I think you are going to face, not that we should not do it, but that we would like to know what you are going to reduce, prioritize, so that we might participate in what is ultimately our authority.

I will let it go at that, but that is a process that would have to—I think have to take place from Mr. Cooper's suggestion to become law. And I do think his suggestion should become law. Thank you very much.

Mr. ROGERS. I thank the gentleman for yielding back.

The chair believes—is led to believe that the gentleman from Rhode Island would like to be recognized again?

Mr. LANGEVIN. If I could, just——

Mr. ROGERS. Absolutely.

Mr. LANGEVIN. Thank you, Mr. Chairman.

One last question, if I could, General Shelton or Mr. Klinger. What is the status of the new acquisition strategy for the Evolved Expendable Launch Vehicle program? How did the Air Force determine which satellite payloads to set aside for competition? And which programs were part of the ULA block buy? And finally, how does the Air Force plan to manage this competition to ensure a level playing field?

General SHELTON. Yes, sir. As we looked—we set aside two missions, and those missions were research and development, science

and technology kind of based missions. They weren't operational—mainstream operational missions. So we felt like we could take a little bit more risk, set those aside, and provide those as seed corn, if you will, toward new entrant certification. So that is just part of the process, setting those aside, making them a vehicle toward certification.

We believe that we will have a struggle here, as we try to allocate expenses that are now part of the foundational launch capability, allocate those to an individual mission cost, if you will, because that is not the way we do it right now. We provide the launch bases. We provide the launch crews. That is just the cost of doing business, if you will. And then we buy booster by booster.

Allocating those fixed costs, if you will, booster by booster is going to be a bit of a challenge for us to do an apples-to-apples competition. But that is our job to do, and we will do it.

Mr. LANGEVIN. True. I think a level playing field in that competition is absolutely essential, to make sure that we are comparing apples-to-apples and——

General SHELTON. Yes, sir.

Mr. LANGEVIN. Thank you.

Mr. Klinger, do you have anything else to add?

Mr. KLINGER. You asked about—Congressman, you asked about the acquisition strategy, and that was signed—the amendment to the existing acquisition strategy was signed in February 2013.

Mr. LANGEVIN. Okay. Very good. Thank you very much. I will yield back, Mr. Chairman.

Mr. ROGERS. I thank the gentleman. And I want to thank our witnesses again for your participation and your preparation. I would remind all the witnesses that the hearing record will be left open for 10 days. There may be some members who could not make it today that would have some questions that they would submit to you in writing, or maybe some of the members here who think of something afterwards they would like to get an answer from. So I would ask you to respond to those in writing.

And with that, this committee is adjourned.

[Whereupon, at 4:53 p.m., the subcommittee was adjourned.]

A P P E N D I X

APRIL 25, 2013

PREPARED STATEMENTS SUBMITTED FOR THE RECORD

APRIL 25, 2013

Statement of Hon. Mike Rogers

Chairman, House Subcommittee on Strategic Forces

Hearing on

Fiscal Year 2014 National Defense Authorization

Budget Request for National Security Space Activities

April 25, 2013

Good afternoon. I want to welcome everyone to the Strategic Forces Subcommittee's hearing on the fiscal year 2014 budget request for national security space activities. Our distinguished panel of experts this afternoon are:

- General William Shelton, Commander of Air Force Space Command;
- Ms. Betty Sapp, Director of the National Reconnaissance Office;
- Mr. Gil Klinger, Deputy Assistant Secretary of Defense, Space and Intelligence Office; and
- Mr. Doug Loverro, Deputy Assistant Secretary of Defense for Space Policy.

I appreciate your time in appearing before this subcommittee, and I thank you for your leadership in national security space.

Space is a critical element of our national security, in both peace and wartime environments. I am very concerned of the impact of sequestration on national security space programs, and I appreciate hearing more from you, during your opening statements, on this issue.

Potential adversaries have taken note of our reliance on space, and are developing the means to degrade, deny, or destroy our capabilities. Just like in the evolution of ground, sea, and air platforms, when defenses and survivability mechanisms had to be developed to keep pace with the threat, now this is happening with space systems.

I am pleased to see the Department's recognition of the threat, as evidenced by the increased investment in space situational awareness in the fiscal year 2014 budget request. But I remain concerned on the future implementation of space defense and resilience, to include breaking-up or "disaggregating" programs that we've invested billions to develop and are just starting to provide the necessary capabilities for the warfighter. I look forward to further dialogue and study of this important topic.

Separately, I commend the Department on the significant advances it has made on many space programs. After years of massive cost and schedule overruns, we have entered a new period of stable procurement and incremental development. As noted above,

I am skeptical when I hear that we now may want to break up these successful programs.

For instance, the Air Force recently reported that new block-buy strategies for the Space-Based Infrared System, Advanced Extremely High Frequency Satellite, and the Evolved Expendable Launch Vehicle program are resulting in over $2.5 billion in savings over the next 5 years.

That is a tremendous success for the military and the taxpayer and I hope to see those savings reinvested to provide the necessary modernization initiatives in accordance with warfighter requirements.

Thank you again for being with us today, and I look forward to your testimony. Ranking Member Cooper and I have spent a lot of time together visiting an NRO ground station, the NGA headquarters, and getting the classified mission and threat briefs. We're both focused on the opportunities and threats we face in space.

DEPARTMENT OF THE AIR FORCE

PRESENTATION TO THE SUBCOMMITTEE ON STRATEGIC FORCES

HOUSE ARMED SERVICES COMMITTEE

U.S. HOUSE OF REPRESENTATIVES

SUBJECT: FISCAL YEAR 2014 NATIONAL DEFENSE AUTHORIZATION BUDGET REQUEST FOR NATIONAL SECURITY SPACE ACTIVITIES

STATEMENT OF: GENERAL WILLIAM L. SHELTON
COMMANDER, AIR FORCE SPACE COMMAND

April 25, 2013

NOT FOR PUBLICATION UNTIL RELEASED
BY THE ARMED SERVICES COMMITTEE
SUBCOMMITTEE ON STRATEGIC FORCES
U.S. HOUSE OF REPRESENTATIVES

Introduction

Mr. Chairman and Representative Cooper, it is an honor to appear before you and your committee today as the Commander of Air Force Space Command.

I have the distinct privilege of leading over 40,000 people who deliver our Nation's space and cyberspace capabilities around the world, 24 hours a day, 7 days a week. From the Fourteenth and Twenty-Fourth Air Forces, to the Space and Missile Systems Center, to the entire breadth of this Command, we embody the fighting spirit, flexibility and ingenuity of the U.S. Air Force. Outstanding Airmen are the core of our team and I will take a moment to highlight a few individuals.

Major Kenneth Holmes spent 140 days deployed to Bagram Air Base, Afghanistan. During that deployment, his leadership and expertise enabled a Joint Task Force to significantly disrupt thousands of hours of enemy communications, ultimately aiding in the capture or elimination of over 1,470 enemies, including 166 high-value individuals. In January 2013, Major Holmes was presented the Forrest S. McCartney National Defense Space Award in recognition of his ability to integrate space capabilities into the fight.

Captain Kathleen Sullivan, a flight test engineer at Buckley Air Force Base, Colorado, led the integration of the Space-Based Infrared System into live-fire Missile Defense tests. She incorporated next-generation missile warning data into the missile defense kill-chain during multiple test campaigns, testing capabilities that will better protect the United States and our allies. Captain Sullivan was also my command's nominee for the Air Force Lance P. Sijan Award, in recognition of her outstanding leadership.

Senior Airman Nicholas Hurt, a member of the 721st Security Forces Squadron, Cheyenne Mountain Air Force Station, Colorado, was responsible for helping secure Bagram Air

Base, Afghanistan. During his deployment, he routinely led 13-person squads on outside-the-wire reconnaissance patrols, located and secured unidentified explosive ordnance and responded to indirect fire incidents. He was one of my Command's Outstanding Airmen of the Year and is now one of the Air Force's 12 Outstanding Airmen of the Year for 2012.

Major Holmes, Captain Sullivan, Senior Airman Hurt, and other members of the Command bring foundational space and cyberspace capabilities to the Nation. It is imperative that the U.S. Armed Services operate effectively in space and cyberspace, as noted in the Secretary of Defense's January 2012 *Sustaining U.S. Global Leadership: Priorities for 21st Century Defense* strategic guidance. Additionally, the President's *2010 National Security Strategy* states, the "space and cyberspace capabilities that power our daily lives and military operations are vulnerable to disruption and attack." We are mindful there are ever-changing threats to our systems and to our ability to operate effectively in space and cyberspace. Whether the threats originate from an adversary or are environmental or fiscal in nature, Air Force Space Command forces still have the day-to-day responsibility to conduct global operations in and through space and cyberspace, from peace through crisis and war, fulfilling tactical and strategic objectives on local and global scales.

Since its inception just over 30 years ago, the Command has made tremendous progress in evolving and sustaining space and cyberspace capabilities. In an era of declining budgets, growing threats and increasing requirements, the Command continues providing cost-effective, foundational space and cyberspace capabilities. I have three goals to ensure those foundational capabilities are available to the warfighter and the Nation: to provide assured full spectrum space and cyber capabilities, to develop highly skilled and innovative space and cyberspace professionals and to provide resilient, integrated systems that preserve operational advantage.

This statement is organized around these goals and the Command's national security space activities to fulfill them.

Provide assured full spectrum space capabilities

Space capabilities are critical to the Joint Force Commander's ability to deter aggression, win America's wars and conduct other missions such as humanitarian and disaster relief operations. In addition, the U.S. and global economies rely on space systems to enable vital activities such as navigation, commerce and agriculture. As the Air Force's space superiority lead, I am responsible for organizing, training and equipping our space capabilities. In the current fiscal climate, we are managing increased risks across the enterprise while modernizing, sustaining and acquiring space capabilities, consistent with National, Department of Defense, Joint and Air Force priorities. We have made significant strides in providing game-changing effects to the warfighter and I would submit that, under the strong leadership of Lieutenant General Ellen Pawlikowski, Commander of our Space and Missile Systems Center, we have turned the corner on space acquisition, delivering cost-effective capabilities. Within this context, I would like to highlight some of our space capabilities that are critical to our Nation's security.

Nuclear, Survivable; Protected Tactical and Unprotected Communications

The *2011 National Military Strategy* notes that the interlinked domains of air, space, and cyberspace are essential to the Joint forces' ability to deter and defeat aggression. Our communication satellites link the domains by providing nuclear-survivable communications for the President and national leaders as well as protected, tactical and unprotected communications to the warfighter.

The Advanced Extremely High Frequency Satellite Program and its secure communications capability is one of those protected, vital links. We launched the second satellite in 2012 and the third satellite is on track for a late 2013 launch. We also continue to execute our near-term Space Modernization Initiative investment strategy, establishing a competitive industrial base and demonstrating fundamental elements for a resilient, next-generation, protected military satellite communications capability.

The Family of Beyond-Line-of-Sight Terminals will provide nuclear survivable communications to airborne and ground command posts, manned bombers and manned intelligence, surveillance and reconnaissance aircraft using the Milstar and Advanced Extremely High Frequency constellations. In 2012, to reduce cost risk to the Government, the current terminal development contract was converted from cost plus to fixed price, and competition was injected into the program with the award of an alternate source development contract. More recently, the program office released a Production Request for Proposal for the limited competition of both an Airborne Wideband Terminal and a Command Post Terminal with a planned contract award the first quarter of FY14 and delivery of an initial Command Post Terminal with Presidential, National and Voice Conferencing capability in FY15.

The Wideband Global Satellite (WGS) system provides high-capacity communications to the Department of Defense, the White House Communications Agency, the Department of State and an increasing number of international partners. We launched and tested the fourth satellite in 2012 and it is providing critical wideband communications to U.S. and coalition forces in U.S. Central Command and U.S. Pacific Command. The fifth and sixth satellites are on track for launch during FY13 and are expected to be operational in mid FY13 and early FY14

respectively. Once WGS-5 becomes operational, the constellation will be postured to provide worldwide coverage.

To support our long term investment strategy, we are conducting studies to determine the optimal mix of Department of Defense and commercial solutions to meet the growing wideband demand in the most affordable and resilient manner.

Launch Detection and Missile Tracking

Strategic missile warning is critical to the Nation's survival. Ballistic missiles pose a significant threat to the U.S., our deployed forces, allies and coalition partners. The Command supports the strategic and tactical missile warning missions by providing both space- and ground-based sensors.

The Space Based Infrared System (SBIRS) program, along with the legacy Defense Support Program satellites, provide advanced early warning of missile threats, allowing our Joint warfighters to take swift and appropriate actions. In September 2012, the first geosynchronous orbit SBIRS (GEO-1) began required operational testing. While the mission data is exceeding expectations, we uncovered an unexpected problem which will be resolved shortly with a software update. The fact that the fix is software only gave us the necessary confidence to launch GEO-2 on March 19, 2013.

Ground-based Radars deliver missile warning and missile defense capabilities to counter current and emerging missile threats. We are executing several initiatives to modernize these radars. In addition, we are working several Upgraded Early Warning Radar initiatives with the Missile Defense Agency to improve the radars' ability to provide fire control data for missile defense assets. These initiatives will significantly improve our early warning capabilities by

updating the original 1950's technology and standardizing our operations and sustainment baselines.

Positioning, Navigation and Timing

This has been another successful year for Air Force Positioning, Navigation and Timing capabilities – ensuring the continued health and resilience of the constellation: legacy Global Position System (GPS) IIAs, current generation GPS IIFs and next generation GPS IIIs. Captain Jacob Hempen, a project engineer at our Space and Missile Systems Center, modified satellite battery charging procedures, significantly increasing GPS IIA constellation total battery life by 20 years. Under the leadership of Major Jason Smesny, also from the Space and Missile Systems Center, a combined Air Force and contractor team completed operational checkout of the third GPS IIF four days ahead of schedule. It became part of the operational constellation on November 13, 2012. Between March 2012 and March 2013, we completed production of five GPS IIF satellites, and we will complete production of the final GPS IIF satellite this year, for a total production run of 12 GPS IIF satellites. We plan to launch the fourth GPS IIF in May 2013 and the fifth, sixth and seventh satellites during FY14.

On GPS III, we heeded the lessons learned of the last two decades in terms of management, process rigor, technical discipline and programming to create both a realistic schedule and cost for delivery. As a result, the program team continues to reduce defects, test time and build time while driving down recurring cost. This approach includes the integration of a non-flight satellite testbed space vehicle used for production risk reduction this fiscal year. The team also delivered the propulsion subsystem for the first flight vehicle and completed its first exercise demonstrating space vehicle to ground segment integration. Looking forward to the

production phase, we are also converting the unexercised cost plus space vehicle contract options to fixed price incentive contract options. As a result, GPS III continues to move forward and we fully expect that it will stay within the cost bounds we established in 2008. We are steadfast in the pursuit of affordability and effectiveness initiatives, including examination of alternative architectures as well as exploring dual-launch opportunities to lower costs of launching our next-generation satellites.

The GPS Next Generation Operational Control System, the modernized command and control system, will provide control of GPS IIA, IIF and III, satellites and signals, to include the new Military Code (M-code). The combination of GPS III capabilities, such as M-code, along with modernized user equipment and the new command and control system, will provide Joint warfighters vital capability in challenging environments, such as GPS jamming, as well as robust information assurance. It will ensure the use of the modernized signals by the U.S. and its allies for military purposes.

Space Situational Awareness

Space situational awareness underpins the entire spectrum of space activities, and our focus is on providing forces and capabilities to United States Strategic Command (USSTRATCOM) to detect, track, identify and characterize human-made objects which orbit the Earth. Our efforts contribute to the collaborative, multi-agency endeavor required to ensure comprehensive space situational awareness for the Nation.

Air Force Space Command presents space forces and capabilities to USSTRATCOM through the Fourteenth Air Force, under the command of Lieutenant General Susan Helms. She is dual-hatted as Commander, Joint Functional Component Command for Space (JFCC SPACE),

and therefore is responsible for executing USSTRATCOM's space operations. JFCC SPACE's Joint Space Operations Center (JSpOC) is the avenue through which JFCC SPACE commands and controls space forces and it is the epicenter of the space situational awareness mission. The JSpOC is also the means by which JFCC SPACE coordinates space situational awareness with other agencies.

To support national security space operations in an increasingly challenged environment, the JSpOC collects and processes data from a worldwide network of radar and optical sensors, as well as a dedicated space surveillance satellite. Each day the JSpOC creates and disseminates over 200,000 sensor taskings, which result in nearly 500,000 observations for processing. JSpOC operators use this data to maintain a very accurate catalog for more than 23,000 objects and to perform over 1,000 satellite collision avoidance screenings daily. These operations form the basis of the United States' space situational awareness capability, which is then shared with other operators in the national security, civil and commercial sector of space operations.

The Space Defense Operations Center (SPADOC) is the system of record for cataloging space objects and debris. While essential to safe passage and navigation in space, this system was designed in the 1980s, fielded in the early 1990s, and is at its capacity limits and past its originally projected end-of-life. It is vital to our national security space capabilities that we transition from our current surveillance and catalog maintenance-focused methodology, which limited us to performing forensic analysis during and after a space event (e.g., a collision, break-up or anti-satellite test), to a more holistic space situational awareness capability. We are building the capacity to predict events in space to enable actionable, situational awareness to our space operators, Joint warfighters, allies and other mission partners. This transition requires fielding the next generation system, the JSpOC Mission System (JMS). With its open, service-

oriented architecture, JMS will supply the automation necessary to make better use of the tremendous volume of available sensor data. It will allow improved integration of intelligence data and innovative changes to how we use our systems, thereby providing a more complete, real-time and predictive picture of activity in the space domain.

JMS does not just replace SPADOC, it establishes a baseline for integrating new command and control capabilities in support of the Commander, JFCC SPACE, and Combatant Commanders alike. We achieved a major milestone by completing the operational utility evaluation for the first increment and operational testing was completed on December 13, 2012. It is projected to achieve Initial Operational Capability this Spring.

On November 14, 2012, the U.S. Secretary of Defense and the Australian Minister of Defence signed a Memorandum of Understanding to relocate an Air Force C-band radar on Antigua to Australia. This action represents the next phase in implementing the 2010 U.S. and Australia Space Situational Awareness Partnership.

When the Space Fence program replaces the existing Air Force Space Surveillance System, it will represent an order of magnitude increase in the Nation's Space Situational Awareness capability in Low and Medium Earth Orbits. The program has an approved acquisition strategy that reduces cost, adds much-needed capability, and meets the prescribed initial operational capability timeline. We have selected the Kwajalein Atoll in the Marshall Islands as the first site for the new Space Fence, improving our ability to track objects in all low-earth orbits, and particularly providing unique coverage of low inclination orbits.

The Space Based Space Surveillance satellite, launched in 2010, provides timely, continuous optical surveillance of deep space objects. I declared initial operational capability August 15, 2012, and the Commander of USSTRATCOM accepted the satellite for operational

use on September 10, 2012. We continue to study options for a follow-on program to this vital capability.

Defensive Space Control

The Rapid Attack, Identification, Detection and Reporting System Block 10 program delivers global communication satellite signal interference detection and geo-location capabilities. The current operational prototype provides geo-location on over 500 electromagnetic interference events per month in support of U.S. Pacific Command and U.S. Central Command. Adversaries are getting more sophisticated and we are responding. By 2014, we plan to have global capability to identify and characterize electromagnetic interference and geo-locate electromagnetic interference sources.

Terrestrial Environmental Monitoring

We will extend a half century of Defense Meteorological Satellite Program (DMSP) unique weather monitoring capabilities by launching the final two satellites in the program. DMSP-19 is scheduled to launch in March 2014, and we expect to operate the satellite into 2020. We continue to store and maintain DMSP-20 for a launch on demand. The Joint Requirements Oversight Council has identified potential gaps in meteorological coverage when DMSP reaches its end-of-life in the 2025 timeframe. An Analysis of Alternatives is being conducted to study follow-on options, such as international partnerships, hosted payloads and a new satellite, to continue meteorological support to warfighters in the most cost-effective manner.

Assured Space Access/Spacelift

The 45th Space Wing at Patrick Air Force Base, Florida, and the 30th Space Wing at Vandenberg Air Force Base, California, supported a combined 14 commercial and Government launches in 2012 extending the record-breaking streak to 57 successful Evolved Expendable Launch Vehicle launches since 2002. The Undersecretary of Defense for Acquisition, Technology and Logistics authorized the Air Force to negotiate with the current launch provider, United Launch Alliance, to procure a block buy of launch vehicles while providing an opportunity for new entrant contract awards as early as FY15. Lieutenant Colonel Tobin Cavallari, from the Space and Missile Systems Center, is implementing this acquisition strategy to provide competition and to save over $1billion.

In the area of new entrants, we have made significant progress toward increasing competition for national security space launches. Jointly with National Aeronautics and Space Administration and the National Reconnaissance Office, we formalized new entrant certification criteria. The Air Force subsequently developed a guide providing a process for certifying a new entrant to launch National Security missions. Additionally, two launch service task orders were awarded to a new entrant under the Orbital/Suborbital Program-3 to provide launch services for the Deep Space Climate Observatory mission and the Space Test Program-2 mission.

Satellite Operations

The Air Force Satellite Control Network, the Command's satellite command and control capability, enables critical missile warning, surveillance, weather and communications for our Joint warfighters. In 2012, Joint and allied space professionals used the network to conduct an average of 427 satellite contacts per day with a 99.37 percent contact success rate. They

supported 13 National Security Space launches and 19 space vehicle emergencies. On September 21, 2012 they accomplished a record 527 satellite contacts in a single day. Over the last two years the network successfully conducted over 316,000 supports – this was the busiest two years in its 50-year operational history.

In addition to this busy operations tempo, we upgraded the legacy electronics for the remote tracking station at Guam, modernizing our satellite control capability in the Pacific. Similar upgrades are in progress at the Hawaii remote tracking station, and upgrades will begin in 2013 at the New Hampshire remote tracking station. In the future, we will transition to a modern, secure internet protocol-based architecture, and we are examining the potential of commercial augmentation of our network.

United States Nuclear Detonation Detection System

In a Joint effort with the Department of Energy and Department of State, many Air Force satellites have hosted sensors supporting detection, location and reporting of nuclear detonations in support of warfighter needs and treaty verification requirements. We will continue to support our partners, and I am confident we can jointly determine how to maximize our limited resources while still satisfying the requirements for these sensors.

Field resilient, integrated systems that preserve the operational advantage

Resilient Architectures

Our satellites provide a strategic advantage for the U.S., and as such, we must consider the vulnerabilities and resilience of our constellations. My staff at Headquarters Air Force Space Command, alongside the team at the Space and Missile Systems Center, is leading efforts at balancing resilience with affordability. They are examining disaggregated concepts and

evaluating options associated with separating tactical and strategic capability in the missile warning and protected communications mission areas. We are also evaluating constructs to utilize hosted payload and commercial services, as well as methods to on-ramp essential technology improvements to our existing architectures. For example, we are learning lessons on how to make hosted payloads a realistic option through the Commercially Hosted InfraRed Payload Program, which is a pathfinder asset on orbit today. Beyond the necessity of finding efficiencies and cost savings, we may very well find that disaggregated or dispersed constellations of satellites will yield greater survivability, robustness and resilience in light of environmental and adversarial threats.

Electromagnetic Spectrum

Peacetime and warfighting operations are enabled via employment of a wide variety of advanced wireless systems, including satellites, aircraft, remotely piloted vehicles, land mobile radios, radars, data links and precision guided munitions. The Air Force Spectrum Management Office, led by Colonel Donald Reese, is tasked with preserving electromagnetic spectrum access for Air Force and selected Department of Defense activities and systems. Their efforts have been crucial to our ability to provide support using a variety of airborne and space-borne platforms to users across the globe.

The global and economic demand for this finite resource is continually increasing. In this environment, we strive to assure access for spectrum-dependent military systems and to maintain over 30,000 frequency assignments essential to Service and Joint operations, testing and training. We also support efforts to implement Presidential direction to identify available spectrum for broadband wireless services while protecting vital Air Force capabilities. We are working

closely with other federal agencies to implement actions to protect and advance U.S. and Air Force spectrum interests.

Provide highly skilled and innovative space and cyberspace professionals

Air Force space and cyberspace professionals are the backbone of our success. They provide expertise and innovation for current and expanding missions. To ensure deliberate development of this expertise, the Command manages the Air Force Space and Cyberspace Professional Development Programs for all Air Force specialties. These programs ensure we are providing a well-educated space and cyberspace cadre to units worldwide.

A highlight of my year was presiding over the opening of the Moorman Space Education and Training Center at Peterson Air Force Base, Colorado. On September, 13, 2012, the Center was dedicated in honor of General (Retired) Thomas S. Moorman, Jr., a champion of space professional development. The opening of this center enhances the training provided to the more than 2,500 space professional students from across the Services and allied nations each year. These students receive specialized space system training and professional continuing education at the Advanced Space Operations School and the National Security Space Institute.

Given the technical nature of the space and cyberspace domains, it is essential we have Science, Technology, Engineering and Math (STEM)-educated people in our units. We are strengthening our education requirements in space and cyberspace, but we realize we compete with decreasing numbers of STEM graduates, a national security problem in its broadest sense. Therefore, we are actively promoting the benefits of STEM degrees, starting with elementary school and continuing through the entire educational process. As an example, our cyberspace professionals in 24th Air Force, under the leadership of their commander, Maj Gen Suzanne

Vautrinot, mentor local teams competing in CyberPatriot, a national high school cyber defense competition created by the Air Force Association. In Colorado, Peterson Air Force Base and Buckley Air Force Base have both applied for acceptance into the STARBASE program, a Department of Defense program exposing youth to technological environments and appropriate role models. We believe our investment today in young people is a cornerstone for our success in the future.

Conclusion

The men and women of Air Force Space Command accomplish our mission through a combination of innovation, passion and courage. They are the core of America's space and cyberspace team operating in domains that span the globe. Our single focus endures: providing the best capability possible to ensure success on the battlefield. The Joint warfighter demands it, and the Nation expects nothing less, and therefore, Air Force Space Command remains steadfast in delivering game-changing space and cyberspace forces.

However, we face a new, daunting challenge: providing these foundational capabilities in an environment of sequestration. The very rigid mechanics of the Budget Control Act of 2011 force us into corners, rather than giving us needed flexibility to accommodate current and future budget reductions. In my Command alone, I had to find $508 million in FY13 reductions beginning March 1, 2013. The chaos created in my Command by operations and maintenance reductions this large, in this short time period, can't be overstated. It starts with the justifiable angst of my civilian workforce, facing the prospect of a significant pay cut starting in June for the remainder of the fiscal year. AFSPC Headquarters support contracts have been reduced by 50%, which means lost jobs and reduced staff technical expertise. Operationally, two missile

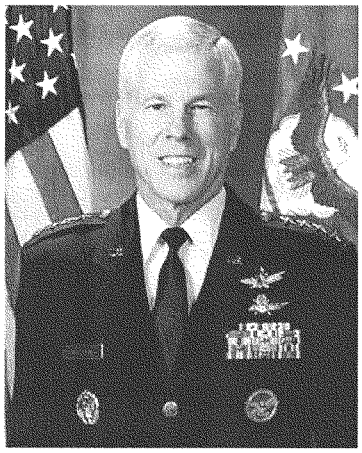
warning radars will not operate at full capacity for the rest of the year, one of which is key to our missile defenses. A unique space surveillance system's coverage will be reduced by one-third, compounding the loss of space surveillance data normally collected by the aforementioned radars we've been forced to scale back. These are not operational decisions arrived at lightly; the so-called "easy" reductions were taken in previous years. We've minimized overall operational impacts as much as possible, but the rigidity in the law dictates we must cut every appropriated line item in our budget, severely restricting our trade space. I strongly ask for your support for the reprogramming actions that will be needed to enable smarter decisions.

I am truly privileged to lead this great Command and I appreciate the opportunity to represent Air Force Space Command before this Committee.

BIOGRAPHY

UNITED STATES AIR FORCE

GENERAL WILLIAM L. SHELTON



Gen. William L. Shelton is Commander, Air Force Space Command, Peterson Air Force Base, Colo. He is responsible for organizing, equipping, training and maintaining mission-ready space and cyberspace forces and capabilities for North American Aerospace Defense Command, U.S. Strategic Command and other combatant commands around the world. General Shelton oversees Air Force network operations; manages a global network of satellite command and control, communications, missile warning and space launch facilities; and is responsible for space system development and acquisition. He leads more than 42,000 professionals assigned to 134 locations worldwide.

General Shelton entered the Air Force in 1976 as a graduate of the U.S. Air Force Academy. He has served in various assignments, including research and development testing, space operations and staff work. The general has commanded at the squadron, group, wing and numbered air force levels, and served on the staffs at major command headquarters, Air Force headquarters and the Office of the Secretary of Defense. Prior to assuming his current position, General Shelton was the Assistant Vice Chief of Staff and Director, Air Staff, U.S. Air Force, the Pentagon, Washington, D.C.

EDUCATION

1976 Bachelor of Science degree in astronautical engineering, U.S. Air Force Academy, Colorado Springs, Colo.
1980 Master of Science degree in astronautical engineering, U.S. Air Force Institute of Technology, Wright-Patterson AFB, Ohio
1986 Armed Forces Staff College, Norfolk, Va.
1995 Master of Science degree in national security strategy, National War College, Fort Lesley J. McNair, Washington, D.C.
1996 Program for Senior Officials in National Security, Syracuse University and Johns Hopkins University
1997 Fellow, Seminar XXI, Massachusetts Institute of Technology, Cambridge

ASSIGNMENTS

1. August 1976 - May 1979, Launch Facilities Manager, Launch Director and Technical Assistant to the Commander, Space and Missile Test Center, Vandenberg AFB, Calif.
2. May 1979 - December 1980, Graduate Student, U.S. Air Force Institute of Technology, Wright-Patterson AFB, Ohio
3. January 1981 - July 1985, Space Shuttle Flight Controller, Johnson Space Center, Houston, Texas
4. July 1985 - January 1986, Student, Armed Forces Staff College, Norfolk, Va.

5. January 1986 - July 1988, Staff officer, Deputy Chief of Staff for Operations, Air Force Space Command, Peterson AFB, Colo.
6. August 1988 - August 1990, Staff Officer, Office of Space Plans and Policy, Office of the Secretary of the Air Force, Washington, D.C.
7. August 1990 - June 1992, Commander, 2nd Space Operations Squadron, Falcon AFB, Colo.
8. June 1992 - June 1993, Executive Officer to the Vice Commander, Air Force Space Command, Peterson AFB, Colo.
9. June 1993 - July 1994, Commander, 50th Operations Group, Falcon AFB, Colo.
10. August 1994 - June 1995, Student, National War College, Fort Lesley J. McNair, Washington, D.C.
11. June 1995 - September 1997, Deputy Program Manager and Executive Assistant, Cooperative Threat Reduction Program Office, Office of the Assistant to the Secretary of Defense for Nuclear, Chemical and Biological Defense Programs, Washington, D.C.
12. September 1997 - August 1999, Commander, 90th Space Wing, Francis E. Warren AFB, Wyo.
13. September 1999 - July 2000, Chief, Space Superiority Division, Office of the Deputy Chief of Staff for Plans and Programs, Headquarters U.S. Air Force, Washington, D.C.
14. July 2000 - November 2000, Director of Manpower and Organization, Office of the Deputy Chief of Staff for Plans and Programs, Headquarters U.S. Air Force, Washington, D.C.
15. November 2000 - May 2002, Director of Requirements, Headquarters Air Force Space Command, Peterson AFB, Colo.
16. June 2002 - January 2003, Director of Plans and Programs, Headquarters AFSPC, Peterson AFB, Colo.
17. January 2003 - May 2003, Director, Air and Space Operations, Headquarters AFSPC, Peterson AFB, Colo.
18. June 2003 - January 2005, Director of Capability and Resource Integration (J8), USSTRATCOM, Offutt AFB, Neb.
19. January 2005 - May 2005, Director of Plans and Policy (J5), USSTRATCOM, Offutt AFB, Neb.
20. May 2005 - December 2008, Commander, 14th Air Force (Air Forces Strategic), AFSPC, and Commander, Joint Functional Component Command for Space, USSTRATCOM, Vandenberg AFB, Calif.
21. December 2008 - July 2009, Chief of Warfighting Integration and Chief Information Officer, Office of the Secretary of the Air Force, the Pentagon, Washington, D.C.
22. July 2009 - January 2011, Assistant Vice Chief of Staff and Director, Air Staff, U.S. Air Force, the Pentagon, Washington, D.C.
23. January 2011 - present, Commander, Air Force Space Command, Peterson AFB, Colo.

SUMMARY OF JOINT ASSIGNMENTS
1. June 1995 - September 1997, Deputy Program Manager and Executive Assistant, Cooperative Threat Reduction Program Office, Office of the Assistant to the Secretary of Defense for Nuclear, Chemical and Biological Defense Programs, Washington, D.C., as a colonel
2. June 2003 - January 2005, Director of Capability and Resource Integration (J8), USSTRATCOM, Offutt AFB, Neb., as a brigadier general and major general
3. January 2005 - May 2005, Director of Plans and Policy (J5), USSTRATCOM, Offutt AFB, Neb., as a major general
4. May 2005 - July 2006, Commander, Joint Space Operations, USSTRATCOM, Vandenberg AFB, Calif., as a major general
5. July 2006 - December 2008, Commander, Joint Functional Component Command for Space, USSTRATCOM, Vandenberg AFB, Calif., as a major general and lieutenant general

BADGES
Command Space Badge
Master Cyberspace Badge
Parachutist Badge

MAJOR AWARDS AND DECORATIONS
Distinguished Service Medal with oak leaf cluster
Defense Superior Service Medal with oak leaf cluster
Legion of Merit with oak leaf cluster
Defense Meritorious Service Medal with oak leaf cluster
Meritorious Service Medal with four oak leaf clusters
Air Force Commendation Medal

Joint Meritorious Unit Award with two oak leaf clusters
Air Force Outstanding Unit Award with silver and two bronze oak leaf clusters
Air Force Organizational Excellence Award with oak leaf cluster

EFFECTIVE DATES OF PROMOTION
Second Lieutenant June 2, 1976
First Lieutenant June 2, 1978
Captain June 2, 1980
Major May 1, 1985
Lieutenant Colonel March 1, 1990
Colonel Feb. 1, 1994
Brigadier General Jan. 1, 2001
Major General July 1, 2004
Lieutenant General Dec. 20, 2007
General Jan. 5, 2011

(Current as of January 2013)

Statement for the Record

Ms. Betty Sapp

Director, National Reconnaissance Office

Before the House Armed Services Committee

Subcommittee on Strategic Forces

25 April 2013

NOT FOR PUBLICATION UNTIL RELEASED BY THE
HOUSE ARMED SERVICES COMMITTEE
STRATEGIC FORCES SUBCOMMITTEE
UNITED STATES HOUSE OF REPRESENTATIVES

INTRODUCTION

Chairman Rogers, Ranking Member Cooper, and distinguished Members of the Committee, I am pleased to appear before you today on behalf of the National Reconnaissance Office (NRO) to discuss National Security Space Activities. It is an honor for me to appear alongside our mission partners from the Department of Defense (DoD), Mr. Douglas Loverro, Deputy Assistant Secretary of Defense for Space Policy; Mr. Gil Klinger, Deputy Assistant Secretary of Defense for Space and Intelligence and General William Shelton, Commander, Air Force Space Command. The NRO's close relationship and continuing collaboration with our mission partners are vital to maintaining our Nation's superiority in space.

The unclassified nature of today's hearing precludes me from discussing many details of NRO programs, as well as sharing some of our greatest successes. However, I welcome additional opportunities to meet in another setting to discuss with you NRO capabilities, partnerships, and value of the NRO contributions to National Security.

NRO Priorities

The NRO remains committed to maintaining its stellar record of acquisition and program successes, while also delivering a more capable, resilient, and affordable future NRO architecture

to respond to emerging threats and dynamic mission needs. Over the coming years, the NRO will incorporate revolutionary new technologies into our architecture that will provide enhanced support to the warfighter while also improving the resiliency of our systems. These technologies are made possible in part by our investments in research and development, and we will continue these strong investments to drive enhanced future capabilities. We also continue to improve our relationships with our key mission partners to adapt on-orbit systems and capabilities to support current warfighter needs.

State of the NRO

I would like to begin with a few words about the current state of the NRO. Last year we executed yet another successful launch campaign placing four satellites in orbit in six months, and we're scheduled to launch two more in the second half of this year. These successful launches are a visible testament to the diligent efforts of our program teams who successfully acquire and deliver these complex systems, and each one signifies that a new system will soon be providing enhanced intelligence capabilities to the warfighter. We are committed to smart acquisition investments and practices to ensure the continued coverage and availability of our vital National

Security systems and we work tirelessly to continue to deliver these systems on time and within budget.

The NRO remains committed to maintaining the health of the launch vehicle industrial base to provide our systems with assured access to space. The NRO, in partnership with the Air Force, recently finalized a new Evolved Expendable Launch Vehicles (EELV) acquisition strategy aimed at promoting competition among launch providers while also stabilizing launch cost and sustaining the industrial base. Under the strategy, the NRO and the Air Force will procure 36 EELV booster cores over 5 years from the heritage Atlas and Delta lines, while also reserving up to 14 booster procurements for competition among all certified launch vehicle providers. To that end, the NRO, Air Force, and NASA, have jointly agreed on a strategy for certifying new entrant launch providers, such as Space Exploration Technologies (SpaceX) and Orbital Science Corporation, to facilitate competition, avoid undue duplication in the certification process, and ensure the Government is receiving the most cost effective launch services to meet our required performance. We are dedicated to working with the Air Force, NASA, and commercial space providers to ensure our Nation's launch and space industrial base remains strong enough to meet our mission requirements.

From developing and acquiring new capabilities to launching and operating the most technically-advanced systems, the NRO remains the premier space reconnaissance organization in the world. The unique composition of our workforce is one of our greatest strengths. As you know, we draw our personnel from across the DoD and Intelligence Community (IC), recruiting the best and brightest acquisition, operations, and engineering personnel from the space community. The talented people of the NRO allow our significant and continued mission success, and enable our ability to provide the very best information from the warfighter to the policymaker. I am confident that by continuing to leverage current successes and community workforce strengths, the NRO will continue to provide the Nation with the premier space reconnaissance capabilities for National security.

For the fourth year in a row, the NRO received a clean audit opinion on our Financial Statements, a truly unprecedented accomplishment within the IC. This positive outcome was the result of continued hard work across the NRO workforce and the culmination of a diligently planned and executed effort to continue our achievement in effective financial management. NRO's internal processes for proper funds management and accurate financial reports have been validated, and we are successfully positioned to continue to sustain this clean audit into the future.

Additionally, our Ground Enterprise Directorate continues to make considerable headway in moving us toward a more holistic, "horizontal" ground enterprise - a single networked information collection and distribution system more responsive to user needs, more resilient in the face of projected threats, and much more efficient and effective in providing mission capabilities.

SPACE PROTECTION

The NRO fully recognizes that space is an increasingly contested and congested environment. While foreign nations understand our country's reliance on space and seek means to deny our space advantages, our ability to operate in the presence of threats helps to deter foreign actions and maintain a strategic advantage. To that end, the NRO has worked jointly with the Air Force to align the NRO's space protection activities with Air Force Space Command, the DoD, and the broader space community. The collaboration across the defense and intelligence communities enhances the NRO's capability to effectively plan for emerging threats, and greatly strengthens the architecture to ensure continued operational freedom.

NRO CONTRIBUTIONS: CRITICAL TO THE FIGHT.

Lastly, I would like to highlight the real bottom line for the NRO - our support to the warfighter. In addition to traditional NRO ISR systems and support, we provide a wide array of focused capabilities to help solve specific, critical ISR needs in the Afghanistan area of responsibility. We've brought dozens of innovative ISR solutions to the fight. These services, products and tools directly contribute to the highest priority missions, to include: counter-Improvised Explosive Device (IED) efforts; identifying and tracking High-Value Targets; countering narcotics trafficking; and special communications.

However, the most important capability we provide to the fight is our people - our on-site problem-solvers. We typically have about 75 men and women deployed into harm's way on any given day serving as liaison officers to units, providing technical expertise, or supporting those focused NRO programs. Every day, they have a direct and positive influence on combat operations and mission success, to include saving the lives of U.S. and Coalition forces.

I'll cover just a few highlights, but trust me when I say that we bring a lot more to the fight. We partnered with the National Geospatial-Intelligence Agency to provide airborne Light Detection and Ranging (LIDAR) imagery. LIDAR has been

very effective in mapping the rugged terrain of Afghanistan, improving force protection, operational planning, and situational awareness.

In the counter-IED effort one of our most successful programs continues to be RED DOT. RED DOT takes the various sources of indications and warnings we receive, combines them into an integrated picture, then sends them out directly to the tactical user, to include the HUMVEE on patrol. Last year alone, RED DOT indications resulted in the removal of more than 235 IEDs from the battlefield - a huge success for the program, and a real life saver for our men and women in harm's way.

A real strength of the NRO is our ability to fuse multi-intelligence data to support warfighter intelligence needs. We have helped the warfighter visualize large volumes of data temporally and spatially, establishing patterns of life, identifying the unusual within a multitude of fused data sets, and integrating full motion video data with automated multi-intelligence tipping, cueing, and alerting capabilities. Our cutting-edge solutions combine GEOINT and SIGINT, and span the space, air, and ground operational domains to improve the warfighter's common operational picture and enhance his effectiveness in finding, fixing, and finishing targets.

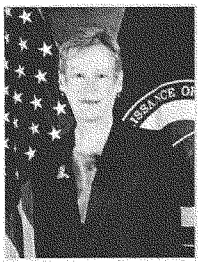
Additionally, the NRO has developed numerous advanced capabilities for Personnel Recovery and Friendly Force Tracking,

and our quick-reaction capability solutions have been employed with resounding success in counter-IED, homemade explosive materials detection, and special communications missions worldwide.

CONCLUSION

The men and women of the NRO embody our core values of Integrity and Accountability, Teamwork Built on Respect and Diversity, and Mission Excellence. It is our highly skilled personnel who ensure we execute our mission to provide "Innovative Overhead Intelligence Systems for National Security." Driven by our extraordinary people, the NRO will continue on the path of delivering acquisition and operations excellence, as well as the unparalleled innovation that is the hallmark of our history and the foundation of our future. We encourage you to continue visits to the NRO, our mission ground stations, and satellite factories for detailed discussions on how our systems directly support the national security of the United States.

Mr. Chairman and members of the Committee, thank you for your continued support of the National Reconnaissance Office and the opportunity to appear before you today.



Betty J. Sapp
DIRECTOR, NRO

(U) Betty Sapp was appointed the 18th Director of the National Reconnaissance Office (DNRO) on July 6, 2012. The DNRO provides direction, guidance, and supervision over all matters pertaining to the NRO and executes other authorities specifically delegated by the Secretary of Defense and the Director of National Intelligence.

(U) Ms. Sapp began her government career as a United States Air Force officer in a variety of acquisition and financial management positions, including: business management positions in the NRO; Program Element Monitor at the Pentagon for the MILSTAR system; Program Manager for the FLTSATCOM program at the Space and Missile Systems Center in Los Angeles; and manager of a joint-service development effort for the A-10 engine at Wright-Patterson Air Force Base in Dayton, Ohio.

(U) In 1997, Ms. Sapp joined the Central Intelligence Agency. She was assigned to the NRO where she served in a variety of senior management positions. In 2005, she was appointed the Deputy Director, NRO for Business Plans and Operations. As such, she was responsible for all NRO business functions, including current-year financial operations, preparation of auditable financial statements, business systems development, budget planning, cost estimating, contracting, as well as all executive and legislative liaison activities.

(U) In May 2007, Ms. Sapp was appointed the Deputy Under Secretary of Defense (Portfolio, Programs and Resources), Office of the Under Secretary of Defense for Intelligence. In this position, she was responsible for: executive oversight of the multibillion-dollar portfolio of defense intelligence-related acquisition programs; the planning, programming, budgeting and execution of the multibillion dollar Military Intelligence Program; and the technology efforts critical to satisfying both current and future warfighter needs.

(U) In April 2009, Ms. Sapp was appointed the Principal Deputy Director, National Reconnaissance Office (PDDNRO). As PDDNRO, she provided overall day-to-day management of the NRO, with decision responsibility as delegated by the DNRO.

(U) Ms. Sapp holds a Bachelor of Arts, and an MBA, Management, both from the University of Missouri, Columbia. She is also Level III certified in Government Acquisition and was certified as a Defense Financial Manager. Ms. Sapp is a native of St. Louis, Missouri, and now resides in Alexandria, Virginia.

Statement for the Record

to the

House Armed Services Committee

Strategic Forces Subcommittee

25 April 2013

Gil I. Klinger

Deputy Assistant Secretary of Defense

For

Space and Intelligence

Thank you, Chairman Rogers, Ranking Member Cooper, and members:

It is my pleasure to be part of this distinguished panel, representing the spectrum of disciplines that are key to ensuring the success of our space acquisition programs; from policy and governance, to acquisition oversight, program execution and finally to our critical partnership with the Intelligence Community.

In that vein, I would like to highlight the activities we have undertaken to provide a coherent, balanced national security space program that prepares for future challenges, supports our Strategic Guidance to sustain United States global leadership and represents our commitment to accomplish these goals while executing affordable programs, improving efficiency in execution and strengthening the industrial base.

Significantly, this year the Under Secretary of Defense for Acquisition, Technology and Logistics restructured the Evolved Expendable Launch Vehicle program to provide a more efficient contracting strategy for acquiring space launch services and associated launch capabilities for the Department of Defense and the Intelligence Community satellite programs. The revision enables new commercial entrants to compete with the incumbent launch provider, and we are moving forward to introduce competition as early as possible. The new EELV acquisition strategy allowed us to direct the Air Force to fund to a new, reduced cost profile. The Department is still buying 50 cores under the EELV program, but 14 of the 50 are available for competition. The remaining 36 are not available for competition because the payload is too heavy or it must be launched before the new entrants could be certified.

These actions resulted in an estimated savings of over $1B in the Future-Year Defense Program over the Fiscal Year 2013 President's Budget estimate, opening launch services and missions to competition, without excessive and unacceptable risk. These changes have sparked interest in the commercial launch services market. Two companies have begun the process outlined in the EELV New Entrant Certification Guide, published by Space and Missile Systems Center (SMC) in 2011, by delivering statements of intent to achieve certification.

We are moving forward with the deployment of Joint Space Operations Center Mission System Increment 1 in parallel with acquisition decisions on Increment 2. As you know, JMS replaces legacy capabilities with sustainable hardware, open and evolvable software architectures and best of breed space situation awareness tools to ensure we effectively phase each increment for deployment. This has allowed us to streamline processes and quickly move the program to execution.

Last year, I testified that in Fiscal Year 2012 we evaluated space acquisition reform initiatives. I'm pleased to report that in Fiscal Year 2013, these initiatives are integrated into the Department's Better Buying Power 2.0 to better manage the costs of acquisition, while achieving affordable programs. We are refining our contract strategies to incentivize productivity and innovation, and to promote effective competition. Our coordination with industry at each step is critical to developing new business models that can be supported by these types of contract strategies.

As we continue to consider potential alternative acquisition and procurement strategies, we are committed to a disciplined cost approach that incorporates incremental funding. We have established affordability targets for the majority of our large, critical space programs, such as the Advanced Extremely High Frequency satellites, Space Based Infrared System, EELV and the Global Positioning System. I've already mentioned the cost savings we have realized as a result of this approach and the new acquisition strategy for EELV. We are applying these affordability targets in several different ways though, and these initiatives are well underway.

Consistent with the Fiscal Year 2012 National Defense Authorization Act (NDAA) that authorized up to six fiscal years incremental funding to procure two Advanced Extremely High Frequency satellites, we have incrementally funded the AEHF 5-6 production contract in the Fiscal Year 2014 President's Budget. The savings from this fixed price strategy will support continued Space Modernization Initiative (SMI) research and development (RDT&E) activities. We will determine the actual amount of savings when a final price is negotiated, which we expect early this summer.

To achieve stability, the Department is pursuing a similar approach for the Space-Based Infrared System and has funded the follow-on production of two satellites in Fiscal Year 2014 to sustain our strategic and tactical warning capability. The actual amount of savings will be known when the production contract is awarded.

The Department is implementing various better buying power initiatives to make GPS more affordable and to ensure we sustain this critical utility. The Air Force modified their acquisition strategy for the

current buy of GPS III satellites 5-8 from a cost-plus to a fixed-price contract. This will limit risk to the government and encourage the prime contractor to implement cost-cutting measures. The modified strategy leverages efficiencies gained from a stable production line that will drive down unit costs and allow the Department to invest the savings to on-ramp additional capabilities when the risk is low, the technology is mature and it is affordable. Industry has also initiated cost saving measures for the proposed follow-on to the first block of GPS III satellites by using new materials and new technology. Just as important as the affordability initiatives for the satellites is the Department's funding of an assessment to determine the whether to accelerate the Military GPS User Equipment (MGUE) program and the development of the Next Generation Operational Control System, OCX, which is required to enable a new military signal to further improve our GPS anti-jamming capability. Our Fiscal Year 2014 program also funds the efforts to synchronize all three of these segments: space, control and users, a critical contribution to ensuring we "protect the future" of our warfighting capabilities. We are continuing to look to the future, to the strategic transition and rebalancing described in our 2012 Defense Strategic Guidance, *Sustaining U.S. Global Leadership: Priorities for 21st Century Defense*.

Last year, I testified that the Defense Space Council provided in-depth review and recommendations of space issues for the Deputy's Management Action Group (DMAG) making a marked improvement in Fiscal Year 2013's program budget review. I'm pleased to report this year the Defense Space Council focused senior management attention for the Fiscal Year 2014 budget review, resulting in investments to

improve space protection and ensure forces can operate through a degraded space environment.

As you know, we are committed to balancing the modernization of mission capability with the associated risks, both in acquisition and operations. The Department's RDT&E activities focus on addressing obsolescence, technology development and prototyping. It is of paramount importance that we deliver to the warfighter the capabilities they will need in the future, even as we provide them the flexibility to operate globally and locally. We funded the Space Fence in Fiscal Year 2014, which, when fielded, will significantly increase space situational awareness and provide revolutionary improvement to small object detection The 2014 Budget Proposal increased investments over last year in the Space Modernization Initiative for missile warning to inform future acquisition decisions and anticipate evolving threats. We are also assessing how to take better advantage of commercial opportunities. We will continue to pursue more production-oriented processes and quantities, as part of each overall mission architecture. This approach may result in greater affordability and reduced time-to-fielding in the future.

We have established an improved process for defining future space architectures. Last year, I testified that the Defense Space Council chartered three space architecture studies in Fiscal Year 2012. I'm pleased to report we completed the architecture studies for Resilient Based Satellite Communications (SATCOM), Space Control, and Overhead Persistent Infrared. These studies helped the Department frame potential decision points for follow-on capability, including alternatives to extend production for current programs. In Calendar

Year 2013, the Defense Space Council is providing senior steering for on-going Analyses of Alternatives for Space-Based Environmental Monitoring, Space Situation Awareness, and Protected SATCOM, to determine the specific decisions we need to make going forward. The capabilities we are considering are far-ranging; they include commercial augmentation, international cooperation, hosted payloads and other key changes to the way we have done the space business in the past. All of these initiatives are included in our second submission of the 15 Year Space Systems Investment Plan that we will deliver to Congress this Spring. Our investment plan also considers the effects of our budget decisions on the industrial base and its capacity to "flex" with us in the future, while keeping it strong and able to provide the resources we need for tomorrow's capabilities. As I have mentioned, to strengthen the industrial base, we need stability and predictability for the integrators, capable and reliable suppliers over time (protecting our second and third tier) and incentives that will improve productivity and industry investment, in other words a realistic long term plan. We are working these issues with our industry partners every day, but we are also taking a critical look at the real interactions between those suppliers in the space industrial base and the effects that our acquisition decisions have on them. We want to ensure decision-makers consider the full spectrum (science and technology, acquisition, operations and support, policy, work force, and civil and commercial factors) of industrial base issues when developing and executing policies, plans, and programs, and coordinate similar activities with the U.S. civil and commercial space community. We are looking at the health of our space industrial base and while there were a few exceptions, the space sector, as a whole, is financially sound. We are

also being supported by a comprehensive deep dive by the Department of Commerce that is investigating the interdependencies and vulnerabilities of the Space Supply Chain. It will give us a baseline to measure against and to ensure that we support the maintenance of the health of the space industrial base in the future. Additionally, as a result of legislative changes enacted as part of the 2013 National Defense Authorization Act, we have a path to opening up greater international markets for U.S. satellite manufacturers. In the coming year, we expect to implement new rules to enhance the competitiveness of the space industry through the completion of International Traffic in Arms Regulations modifications.

And finally, thank you for your continued support. Overseeing space acquisition requires a constant, steady hand over a long period of time; we appreciate your willingness to engage with us as we consider all of the ramifications of the various architecture alternatives, business models and industry impacts we are addressing to provide a space capability that addresses warfighter needs, prepares for future challenges, looks after the broad range of our national security interests, and protects the United States taxpayer.

SPACE AND INTELLIGENCE OFFICE (SIO)
A Directorate of the Office of the Assistant Secretary of Defense for Acquisition

Gil I. Klinger

Deputy Assistant Secretary of Defense,
Space and Intelligence

Mr. Gil Klinger is the Deputy Assistant Secretary of Defense for Space and Intelligence within the Undersecretary of Defense for Acquisition, Technology, and Logistics where he is responsible for acquisition oversight of all space and intelligence programs executed by the Department of Defense.

Immediately prior to assuming leadership of SIO, Mr. Klinger was the Assistant Deputy Director of National Intelligence for Architecture Engineering & Integration where he led Intelligence Community activities assessing the adequacy of the intelligence collection enterprise, identified shortfalls and solutions, managed teams focused on specific short- and long-term issues in response to Director of National Intelligence taskings, and provided domain and subject matter expertise to the Office of the Director of National Intelligence across a broad range of disciplines and collection areas.

Prior to his assignment at the Office of the Director of National Intelligence, Mr. Klinger was the Director of Space Policy, National Security Council Staff, where he was the lead member of the Executive Office of the President on all space issues. He is principal author of five national space polices, including the first new U.S. space exploration vision in more than a generation.

His previous assignments included serving as Director of Policy, National Reconnaissance Office; Acting Deputy Under Secretary of Defense (DUSD) for Space, and the position of Principal Assistant (DUSD/Space), within the Office of the Deputy Under Secretary of Defense for Acquisition and Technology, where he received the 1997 Presidential Rank Meritorious Executive Award, one of the two highest awards given to civil servants within the U.S. government; Director, Space and Advanced Technology Strategy, also within the Office of the Under Secretary of Defense for Policy; and Staff Assistant, Deputy Director for Strategic Forces Policy, Office of the Under Secretary of Defense for Policy, where he was awarded the Distinguished Civilian Service Medal, the highest award given to civil servants within the Department of Defense.

Mr. Klinger began his career in government service with his competitive selection to the Presidential Management Internship Program with the Office of the Secretary of Defense.

Mr. Klinger graduated Phi Beta Kappa and summa cum laude from the State University of New York at Albany with an undergraduate degree in European History and Political Science. He received his master's degree in Public Policy from the John F. Kennedy School of Government at Harvard University.

Mr. Klinger has been a member of the Senior Executive Service since 1992 and a member of the Senior Intelligence Service since 1999.

To his everlasting good fortune, Mr. Klinger is married to Ms. Susannah O'Donnell, a personal trainer, who grew up all over the world as part of a Foreign Service family. Gil, Susy, and their seven year old daughter Ainsley live in Sterling, along with Heidi the dog, Nittany the cat, and Bob and Cutie the turtles.

NOT FOR DISTRIBUTION UNTIL RELEASED BY
THE HOUSE ARMED SERVICES COMMITTEE

STATEMENT OF

MR. DOUGLAS L. LOVERRO
DEPUTY ASSISTANT SECRETARY OF DEFENSE
FOR SPACE POLICY

BEFORE THE HOUSE
COMMITTEE ON ARMED SERVICES
SUBCOMMITTEE ON STRATEGIC FORCES

APRIL 25, 2013

NOT FOR DISTRIBUTION UNTIL RELEASED BY
THE HOUSE ARMED SERVICES COMMITTEE

Committee on Armed Services

Chairman Rogers, Ranking Member Cooper, and Members of the Subcommittee, I am pleased to join General Shelton, Ms. Sapp, and Mr. Klinger to testify on Department of Defense space programs and policies. A year ago, Ambassador Greg Schulte testified here about the progress in implementing the National Security Space Strategy. I am pleased to continue that discussion today.

Space remains vital to our national security, but the evolving strategic environment increasingly challenges U.S. space advantages. U.S. space capabilities allow our military to see with clarity, communicate with certainty, navigate with accuracy, and operate with assurance. Those capabilities, however, are being provided in a space environment that is increasingly congested, contested, and competitive. Space is increasingly congested, with tens of thousands of trackable man-made objects in orbit, contested, by an ever-increasing number of man-made threats, and competitive, as the U.S. technological lead in space is challenged.

As a country, we are providing these capabilities in an environment that is severely cost-constrained. Space programs are, by their very nature, expensive, and as vulnerable to budget pressure as other government activities. Poorly planned past approaches to space programs have trapped us in a vicious cycle of delayed capability, mounting cost, and increased risk. The growing challenges of the budget, in addition to increasing external threats, compel us now to think and act differently so that in the future what we choose to procure, and how we choose to provision it, will reflect the changed space and fiscal environments.

At the same time, it is not all doom and gloom. Over the last decade, we have seen a welcome growth in the U.S. space sector as newer entrepreneurial suppliers have begun to enter the space arena in both the launch and satellite markets. They are creating a burgeoning commercial space market that can provide significant advantage to DoD if we formulate the

policies and strategies to encourage their growth and use. The policies and strategies that I will discuss today begin to address these challenges and opportunities, but these are just initial steps in an area that will continue to demand attention and action from us all.

I would like to begin with a success story, one that not only energizes our industrial base, but also illustrates that our response to the challenges we face must involve the whole U.S. government – DoD, State, Commerce, Congress, and others—as well as industry. A robust, competitive, and healthy industrial base underpins everything that we do in space. Over the past two decades, the health and competitiveness of the U.S. space industrial base has been challenged by overly restrictive export controls on satellites and related items. The changes made in the Fiscal Year 2013 National Defense Authorization Act put us on a path to modernize and appropriately tailor those export controls to allow industry to compete for sale of those items that are widely available, while focusing export controls on those items most critical to national security. I extend my thanks to Congress, and particularly this Committee, for all of the hard work that went into enacting this legislative change.

Updating satellite export controls will provide the U.S. satellite industry with an opportunity to restore its leadership by allowing it to compete on a more level playing field with its international competitors. This will be particularly beneficial to small- and medium-sized second and third tier U.S. companies that manufacture parts and components for satellites. These reforms will reduce the current incentives for satellite and component manufacturers in other countries to design out or avoid U.S.-origin content. In addition to improving the health and competitiveness of our industrial base, tailoring satellite export controls benefits national security by facilitating cooperation with our Allies and export control regime partners while maintaining robust controls necessary to protect national security.

Moving forward, satellites and related items will follow the existing procedures of the President's Export Control Reform Initiative for rebuilding the categories of the U.S. Munitions List (USML) and their corresponding Commerce Control List (CCL) categories. The interagency team of Commerce, State, Defense, NASA, and the intelligence community will build on the substantial technical work they put into the report required by Section 1248 of the Fiscal Year 2010 National Defense Authorization Act to revise Category XV, Satellites and Related Items, of the USML and its CCL complement. Following a period of public comment on the draft categories, which should begin this spring, the interagency team will make changes based on those comments and consult with Congress both informally and formally before publishing final revised categories, hopefully by the end of the year. We look forward to working with you and our interagency partners to make these important changes to benefit the space industrial base and ultimately our national security.

I view this as an extremely positive first step. But if we are to fully empower our commercial sector, as well as continue to derive the substantial benefits space confers, it will require more than just enhanced supplier access. It requires that we create a safe, stable, and secure space environment. We are pursuing several initiatives that seek to do just that.

Space situational awareness (SSA) is foundational to all of our space activities. SSA capabilities provide the ability to avoid collision with debris or other active spacecraft, as well as rapidly detect, warn, characterize, and attribute natural or man-made phenomena affecting space systems. But effective SSA requires cooperation among space actors – we cannot do it alone. The increasingly congested space environment means that an unprecedented level of information sharing is needed among those actors to promote safe and responsible operations in space and to reduce the likelihood of mishaps, misperceptions, and mistrust. This year, the Commander of

U.S. Strategic Command (STRATCOM) signed the first SSA data sharing agreement with a foreign government, and many more are in varying stages of negotiation. These agreements will complement STRATCOM's more than thirty-five existing SSA sharing agreements with commercial satellite operators. With the extension of this authority to foreign governments, the United States will be able to better assist our partners with current space operations and lay the groundwork for future cooperative projects. Consistent with existing legislative authority, we are committed to providing SSA services to increase the safety of spaceflight for space-faring nations.

As more countries and companies field space capabilities, it is in everyone's interest to act responsibly and protect the safety and sustainability of the space domain. Much as we promoted the now well-accepted rules of the sea in centuries past to stimulate commerce, enhance security, and isolate irresponsible actors, the United States is taking a leading role in international efforts to promote responsible, peaceful, and safe use of space. A more cooperative, predictable environment enhances U.S. national security and discourages destabilizing crisis behavior. Working closely with the Department of State, we are supporting development of data standards, best practice guidelines, and transparency and confidence-building measures for responsible space operations. For instance, we are actively participating with other U.S. departments and agencies in the United Nations (UN) Committee on the Peaceful Uses of Outer Space's work on furthering the long-term sustainability of space, as well as U.S. inputs to a study by a UN Group of Government Experts, which is examining possible transparency and confidence building measures.

The Department of Defense supports U.S. efforts to work with the European Union and other spacefaring countries to develop an International Code of Conduct for Outer Space

Activities. A widely-subscribed Code will encourage responsible space behavior and help identify those who act otherwise, thereby reducing risk of misunderstanding and misconduct. The draft International Code of Conduct focuses on reducing the risk of debris creation and increasing the transparency of space operations. It reflects U.S. best practices and is consistent with current U.S. practices such as notification of space launches and sharing of space data to avoid collisions.

It is important to note that the draft Code of Conduct is not legally binding and that it recognizes the inherent right of self-defense. It focuses on activities, rather than unverifiable capabilities, and better serves our interests than the legally-binding but unverifiable ban on "space weapons" proposed by others. We are committed to ensuring that any Code of Conduct for space activities advances, rather than hampers, our national security, and we will continue to actively participate in international negotiations to shape the Code. With each subsequent draft of the Code, we will assess the text for any potential adverse programmatic or operational impact to ensure that a final Code fully supports our national interests. We are committed to working with the Department of State to keep you informed on the process of developing an international Code of Conduct.

Working with international partners to encourage responsible behavior in space is only a part of our engagement with other space actors. We are also pursuing opportunities to partner with responsible nations, international organizations, and commercial firms to augment the U.S. national security space posture. Through these partnerships, we can ensure access to information and services from a more diverse set of systems. This provides a direct advantage in a contested space environment. Decisions on partnering are made consistent with U.S. policy and

international commitments and take mutual performance benefits, costs, protection of sources and methods, and effects on the U.S. industrial base into consideration.

While space is a domain in which we once operated unchallenged and independent, increasingly we need to operate in space as we do in other domains: in coalitions. Led by General Kehler at STRATCOM, the Department is working with close allies to develop the Combined Space Operations (CSpO) concept. CSpO is a multinational effort focused on cooperation, collaboration, and the integration of military space activities to strengthen deterrence, improve mission assurance, and enhance resilience while optimizing resources across the participating countries. We have completed an initial period of discovery with close allies and are working to further refine the concept and eventually broaden participation to include additional spacefaring countries.

Our allies have significant and growing space-based capabilities in a range of mission areas. By leveraging their systems, we can augment our capabilities, add diversity and resilience to our architectures, and complicate the decision-making of potential adversaries. For example, last year we signed an agreement with Canada to incorporate data from their recently launched Sapphire sensor into the U.S. Space Surveillance Network, and an agreement with Australia to jointly operate a C-band ground-based radar system from the southern hemisphere. We are also exploring jointly operating a Space Surveillance Telescope (SST) on Australian soil. These efforts enhance our collective SSA capabilities, and will directly contribute to the long-term safety and sustainability of the domain. Cooperation can also better enable coalition operations on land, at sea, and in the air, since space-based capabilities are critical enablers of capabilities in these other domains.

As I already mentioned, commercial entities are increasingly important to the Department, and we are pursuing strategic partnerships with these firms to stabilize costs and improve resilience. We are exploring innovative approaches, such as multi-year contract authority or co-investment for commercial space services, hosted payloads, and disaggregated architectures in order to take advantage of the most competitive sectors of our space market. The Department has developed criteria to certify the reliability of new space launch vehicles and will openly compete up to fourteen national security space launches in the next five years. To spur that certification and competition, we recently awarded two scientific missions to one of these firms and placed several other launch providers on contract for future similar missions. Those efforts will help to demonstrate the full range of capabilities necessary to launch the existing range of national security missions.

At the same time, we have guaranteed our current launch provider at least twenty-eight launches. Doing so provides stability to an industrial base that provides critical services, but also ensures a level playing field for competition that can spur innovation, improve capabilities, and most importantly reduce costs without increasing risk. To spur continued growth in the commercial space sector and to foster the competition that creates benefits, which DoD can reap, we will complement these efforts with policies that guarantee a level playing field in the future. Over the next few years we will begin those same steps on the satellite side of our architectures, emphasizing the use of the competitive market and diversity of capability to not only drive down costs but also to enhance resilience and U.S. industrial competitiveness.

All of these efforts across the Department are being led and overseen by a rejuvenated governance structure. The changes to the management and coordination of the national security space enterprise, including the establishment of the Defense Space Council, and the designation

of the Secretary of the Air Force as the Executive Agent for Space, have resulted in significant improvements in information flow across DoD and among U.S. departments and agencies. It has also improved the process for acquisition and policy decisions. We understand Congress's action to reinstate the Operationally Responsive Space (ORS) office and funding, and are working to ensure its goals are realized across future space programs.

Many of the things that I discussed today have been briefed to you previously as part of the National Space Policy and National Security Space Strategy. We have continued our implementation of the National Space Policy and the National Security Space Strategy (NSSS) this year, incorporating these concepts into our first update of the Department of Defense's Space Policy in thirteen years. The DoD Space Policy implements the National Space Policy and NSSS within the formal DoD system of directives, regulations, and guidance, and reflects the Department of Defense's 2012 Strategic Guidance. Together with the June 2012 National Military Strategy for Space Operations, the policy update institutionalizes the changes that DoD is making in a constrained budget environment to address the complex set of space-related challenges and opportunities it faces.

The Department looks forward to working closely with Congress, our interagency partners, our allies, and U.S. industry to continue implementing this new approach to space.

BIOGRAPHY

UNITED STATES AIR FORCE

DOUGLAS L. LOVERRO

Mr. Douglas L. Loverro, a member of the Defense Intelligence Senior Executive Service, is the Executive Director, Space and Missile Systems Center, Air Force Space Command, Los Angeles Air Force Base, Calif. He is the senior civilian executive and principal assistant to the commander. His responsibilities include Air Force research, design, development and acquisition of space launch, command and control, and satellite systems.

Mr. Loverro began his Air Force career in 1976 after graduating from the U.S. Air Force Academy with a Bachelor of Science degree in chemistry. During his career he served in the full range of assignments within the Air Force's and the Department of Defense's developmental sectors including multiple Air Force laboratories, the Electronic Systems and Space and Missile Systems development centers, the Office of the Secretary of Defense, and the National Reconnaissance Office.

Mr. Loverro is credited with a wide-ranging list of accomplishments including the invention of the supersonic chemical oxygen-iodine laser, now the heart of the Air Force's Airborne Laser; the initiation of the Air Force's Global Broadcast Service; and establishing the foundation for all Global Positioning System modernization. In November 2002, Mr. Loverro was selected by the Under Secretary of the Air Force to lead the Future Imagery Architecture Program, the nation's largest-ever space system development. He retired from active duty in February 2006 upon selection as a member of the Defense Intelligence Senior Executive Service. He assumed his current role in January 2008.

EDUCATION

1976 Bachelor of Science degree in chemistry, U.S. Air Force Academy, Colorado Springs, Colo.
1980 Distinguished graduate, Squadron Officer School, Maxwell AFB, Ala.
1980 Master of Business Administration degree, University of West Florida, Pensacola
1987 Master of Science degree in physics, University of New Mexico, Albuquerque
1989 Distinguished graduate, Air Command and Staff College, Maxwell AFB, Ala.
1989 Master of Science degree in political science, Auburn University, Ala.
1994 Distinguished graduate and Senior Research Fellow, Industrial College of the Armed Forces, Fort Lesley J. McNair, Washington, D.C.
1997 Defense Systems Management College, Fort Belvoir, Va.

CAREER CHRONOLOGY

1. 1976 - 1980, experimental chemist, High Explosives Research and Development Facility, Air Force Armament Laboratory, Eglin AFB, Fla.

2. 1980 - 1985, Technical Director, Chemical Oxygen-Iodine Laser, Air Force Weapons Laboratory, Kirtland AFB, N.M.
3. 1985 - 1988, Commandant of Cadets and senior instructor, ROTC Detachment, Massachusetts Institute of Technology, Cambridge
4. 1989 - 1993 Program Manager, Advanced C3I Systems Program Office, Hanscom AFB, Mass.
5. 1994 - 1997, staff assistant for Military Satellite Communications, Office of the Secretary of Defense, the Pentagon, Washington, D.C.
6. 1997 - 1999, Director of Advanced Systems, Headquarters Space and Missile Systems Center, Los Angeles AFB, Calif.
7. 1999 - 2002, System Program Director, Navigation Satellite Timing and Ranging Global Positioning System Joint Program Office, Headquarters Space and Missile Systems Center, Los Angeles AFB, Calif.
8. 2002 - 2005, Commander, Future Imagery Architecture Materiel Wing, National Reconnaissance Office, Chantilly, Va.
9. 2005 - 2007, Associate Director, Imagery Systems Acquisition and Operations, National Reconnaissance Office, Chantilly, Va.
10. 2008 - present, Executive Director, Space and Missile Systems Center, Air Force Space Command, Los Angeles AFB, Calif.

AWARDS AND HONORS
Defense Superior Service Medal with two oak leaf clusters
Legion of Merit
Meritorious Service Medal with two oak leaf clusters
Air Force Commendation Medal
Air Force Achievement Medal
Air Force Organizational Excellence Award
National Reconnaissance Office Gold Medal for Distinguished Service

OTHER ACHIEVEMENTS
1980 Wing Outstanding Achievement Award and Outstanding Contributor, Squadron Officer School
1985 Air Force Invention Award, Chemical Oxygen-Iodine Laser, Air Force Weapons Laboratory
1987 Air Force Instructor of the Year, Air Training Command
1989 Squadron Leadership Award, Air Command and Staff College
1994 First in class, Industrial College of the Armed Forces
2001 Air Force Association General John O'Neill Outstanding Program Director Award, Space and Missile Systems Center
2002 Benjamin H. Oliver Gold Medal for Engineering, Armed Forces Communications and Electronics Association
2003 Norman P. Hays Award, Air Force Space Command, Institute of Navigation
2003 and 2004 National Reconnaissance Office Leadership Award

(Current as of February 2008)

WITNESS RESPONSES TO QUESTIONS ASKED DURING THE HEARING

APRIL 25, 2013

RESPONSE TO QUESTION SUBMITTED BY MR. LANGEVIN

Mr. KLINGER. As the Deputy Assistant Secretary of Defense for Space and Intelligence, I am the primary advisor to the Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)) on all issues associated with the DOD end-to-end Space and Intelligence infrastructure. In this role, I am accountable for acquisition oversight and acquisition related matters. Therefore, I am not able to speak authoritatively on this question. However, I am aware that the Air Force's EELV Launch Capability efforts are currently contracted using a cost-type contract. The Air Force is assessing the contract type as they implement the USD(AT&L)'s direction to commit to up to 36 launch vehicle cores with United Launch Alliance and will assess it again if the Launch Capability is retained in future phases of the EELV program. [See page 24.]

QUESTIONS SUBMITTED BY MEMBERS POST HEARING

APRIL 25, 2013

QUESTIONS SUBMITTED BY MR. ROGERS

Mr. ROGERS. 1) What steps has DOD taken to improve the management of requirements in order to reduce program risk?

General SHELTON. The Air Force has taken several steps to reduce program risk by improving management of requirements through increased education and improvements to the requirements generation process. First, all Air Force requirements managers must complete the Requirements Management Certification Training through Defense Acquisition University courses. Second, each Air Force program entering the requirements process must complete Requirements Risk Assessments that are validated through the Air Force Requirements Oversight Council and Joint Staff. This validation ensures program requirements are vetted against the most significant risks to warfighter missions. Third, during the Analysis of Alternatives (AoA) phase of the acquisitions cycle, cost versus capability analyses ensure that decision makers can make smart decisions on cost versus capability trades. Fourth, capability development documents, based on decisions from the AoA, focus research and development efforts on validated warfighter requirements to guide program managers and reduce the risk of requirements creep.

Mr. ROGERS. 2) How can space acquisitions be made affordable during years of budget constraints? What needs to change in the acquisition paradigm, if anything?

General SHELTON. Making space acquisition more affordable demands greater partnership with industry, increased cooperation with our partners and allies, finding ways to decrease launch costs and ensuring our space architectures are resilient. With the appropriate legislative and policy guidelines in place, we can increase our industry and international partnerships to lower costs in those space mission areas best suited for partnership and focus resources on space mission areas that are less risk tolerant. The Department also needs to continue to explore distributed architectures during the Analysis of Alternatives portion of the acquisition process. Where it makes sense to move away from few, monolithic systems to more, smaller systems, we should do so to both increase resiliency and decrease launch costs. For launch costs, we should simultaneously continue to increase competition in the launch arena by both encouraging new entrants and leveraging market conditions that support more than one viable launch provider.

Mr. ROGERS. 3) Is there an effort to move toward firm fixed-price contracts? Why?

General SHELTON. The Air Force Space and Missile Systems Center (SMC) has moved toward use of more fixed-price contracts where appropriate. As SMC's larger programs move from development to production, program requirements have stabilized and manufacturing processes are becoming more mature, making it sensible to shift to fixed-price contracts. SMC also uses firm fixed-price (FFP) contracts for more commercial-like satellite procurements like the Wideband Global Satellite system. In addition, the Joint Space Operations Center (JSpOC) Mission System (JMS) is being executed using commercial, FFP contract vehicles for software applications.

Mr. ROGERS. 4) What is the status of the new acquisition strategy for the Evolved Expendable Launch Vehicle program? How did the USAF determine which satellite payloads to set aside for competition, and which programs were part of the ULA block-buy? And, how does the Air Force plan to manage this competition to ensure a level playing field?

General SHELTON. The Air Force is implementing a revised Evolved Expendable Launch Vehicle (EELV) acquisition strategy approved by the Defense Acquisition Executive (DAE) on February 11, 2013, which includes a quantity and rate commitment to stabilize the industrial base, as well as certification criteria for new entrants. All qualified competitors will have an opportunity to compete as early as FY15. A quantity commitment of 36 cores (supporting all National Security Space programs) allows ULA, the current EELV provider, to purchase economic order-type quantities of critical parts and components, run production lines more efficiently, and reduce non-recurring engineering costs. The strategy sets aside up to 14 cores (based on physical capability of new entrant expected performance), in addition to the above commitment, for competition as early as FY15 if new entrants become certified. If no certified competitor is viable at the time of need, these missions will

be awarded to the incumbent, under variation in quantity and configuration (VIQ&C) provisions to be negotiated into a contract with ULA.

The specific method in which the current incumbent EELV Launch Capability (ELC) and EELV Launch Services (ELS) costs will be competed with new entrants has yet to be determined, but will be addressed in the Source Selection Plan. The details of the competition are being developed and will ensure the best value for the Government among all certified providers and will be conducted in accordance with Federal Acquisition Regulations.

Mr. ROGERS. 5) What is the process to assess the risk classification of payloads for the Evolved Expendable Launch Vehicle?

General SHELTON. National Security Space (NSS) Payloads are classified by each responsible agency using a common set of criteria as specified in the coordinated New Entrant Strategy. These criteria include national significance, complexity, mission lifetime/constellation health, cost, launch constraints, in-flight maintenance and re-flight opportunities. NSS missions will usually be assigned a Class A risk designation; however, some may be assessed as Class B based on the above criteria.

Mr. ROGERS. 6) In GAO's annual report on duplication, overlap, and fragmentation, it reported that "Space launch acquisition processes for NASA and DOD are not formally coordinated, duplicate one another, and may not fully leverage the Government's investment because the Government is not acting as a single buyer." Please identify cost savings opportunities and identify what is being done to reduce duplication and leverage investments.

General SHELTON. Current U.S. Space Transportation Policy (NSPD–40), December 2004, assigns separate responsibilities to the Secretary of Defense and the NASA Administrator to purchase launch services for national security requirements and civil requirements, respectively.

We continue to pursue the goal of improving efficiencies and improving the Government's buying power for Evolved Expendable Launch Vehicle (EELV) launch vehicles and are working with our NASA colleagues in such a way as to achieve this goal while still allowing each agency to perform its assigned space-related responsibilities.

We believe wholesale consolidation is not viable due to the unique responsibilities of each agency. That said, the Air Force is leveraging the combined Air Force/NASA/NRO buying power to obtain a more favorable economic order quantity pricing construct in the FY13–17 Launch Vehicle Production Services contract which will benefit all ULA customers.

Mr. ROGERS. 7) What is DOD doing, or planning to do, to define and assess its mission assurance costs and activities, and to what extent will the strategy protect against overly high launch vehicle prices compared with mission assurance changes/efficiencies resulting from these assessments? Further please outline how mission assurance for national security space missions differs from commercial space missions.

General SHELTON. The Air Force Space and Missile Systems Center (SMC) collaborates with our industry partners to ensure our space system acquisitions are cost effective with acceptable risk. In the last five years, we have experienced unprecedented success in our launch operations. The experience we have gained based on mission assurance priorities and requirements are being used to identify opportunities to reduce mission assurance costs. Also, in collaboration with industry, we are identifying non-value added tasks or unnecessary operations.

The Evolved Expendable Launch Vehicle (EELV) new entrant acquisition strategy is to permit commercially available launch services with proven mission practices and design to compete for contract awards. New entrants wishing to participate in the EELV program must meet SMC mission assurance standards for launch systems development and operations.

Government requirements for risk management and mission assurance are different from those of the commercial market. Commercial space systems, when launched, focus on loss to capital and typically use private insurance to offset any losses. National Security Space missions measure loss in terms of mission capability and are self-insured. Typical mission assurance costs are approximately 5% of the total cost of the satellite and launch vehicle. This level of expense is justified in light of the operational and financial costs of a launch failure.

Mr. ROGERS. 8) How will certified cost and pricing data requirements be applied to EELV contractors, both currently and in a potential future competition?

General SHELTON. New entrants will be required to comply with applicable accounting standards related to Federal Acquisition Regulation, Part 15, contracts and progress payment provisions.

Mr. ROGERS. 9) What are the projected savings for the dual launch capability for GPS III? How will you ensure a level-playing field for new entrants that might compete for GPS launches?

General SHELTON. Dual launch is an approach to lowering launch costs. It originated in the FY13 President's Budget as a potential cost savings/risk mitigator and relieves operational congestion to the Consolidated Launch Schedule and Launch Manifest at the Eastern Range. This effort is not yet on contract, so the cost data available is an estimate. We anticipate a total cost avoidance of approximately $500M through FY29 if operational considerations allow utilization of dual-launching GPS on a routine basis.

It is the Government's intent to provide assured access to space at the best value to the Government, and not to posture one launch provider with a competitive advantage. Any costs associated with mission-unique payload integration will be expressly excluded from consideration during competition to ensure a level playing field and no unfair advantage for the incumbent.

There are numerous unknowns concerning potential new entrants and the performance characteristics of the launch vehicles they are developing. Along with certified new entrants, dual launch capability will be an invaluable tool to reconstitute a critical constellation of satellites quickly. When a new entrant becomes certified, the Air Force will reassess the best solutions with the criteria laid out for any full and open competition.

Mr. ROGERS. 10) How is resilience measured and what are the most important steps the U.S. needs to take in order to create space systems that are resilient to threats?

General SHELTON. Resilience is a combination of both quantitative and qualitative inputs. The proposed DOD definition of resilience for space is ". . . the ability of an architecture to support the functions necessary for mission success in spite of hostile action or adverse conditions. An architecture is 'more resilient' if it can provide these functions with higher probability, shorter periods of reduced capability, and across a wider range of scenarios, conditions and threats. Resilience may leverage cross-domain or alternative Government, commercial, or international capabilities." As this definition is less than two years old, DOD organizations continue to refine ways for quantitative resilience analysis during the budget review and space Analysis of Alternatives processes. These quantitative measurements will, necessarily, vary across the space mission areas.

Air Force Space Command is developing metrics to measure the resilience of providing capabilities to the warfighter and Nation based on warfighter requirements and threats. The Air Force is currently evaluating mission areas through Space Modernization Initiative (SMI) investments and other studies to determine what steps should be taken to ensure the Air Force provides resilient capability in the increasingly congested, contested, and competitive space environment.

Mr. ROGERS. 11) Please describe the current efforts and priority you are placing on space situational awareness and space protection.

General SHELTON. Space capabilities are critical to enable United States and allied forces to accomplish missions ranging from winning wars to humanitarian and disaster relief operations. In addition, the United States and global economies have become equally reliant on space capabilities. The first step in being able to protect those capabilities is having the Space Situational Awareness (SSA) to detect, track, and identify human-made objects in Earth orbit; characterize threats, hostile, unintentional and even environmental; and integrate space situational data into decision quality information. SSA is fundamental to the protection and sustainment of our capabilities.

For SSA, our first priority is to preserve current capabilities in light of the difficult decisions that were necessary to comply with sequestration. The next priority is to narrow the gaps imposed by current system limitations and increasing threats. Air Force Space Command (AFSPC) is investing more capable ground sensors, satellites and modernizing data integration and processing.

In parallel to enhancing our SSA capabilities, AFSPC is also studying approaches to protecting our critical space assets. Our current efforts are focused on developing more resilient architectures. Leveraging the interest of the entire national security space community, we are working to determine the right balance between capability, affordability and resilience that will enable a greater ability of our architecture to respond to threats, both unintentional and intentional. AFSPC will continue to work with the newly chartered Space Security and Defense Program, among others, to develop and integrate these concepts into our architectures, providing for much needed protection of our critical space assets.

Mr. ROGERS. 12) To what extent has DOD validated the assertion that disaggregated architectures offer to greater resiliency, operational efficiency, and/or cost savings?

General SHELTON. Our efforts to date have focused on evaluating more affordable, disaggregated systems as future alternatives to, or evolutions of, existing space architectures. In principle, disaggregation offers more resilience and achieves cost efficiencies through the use of smaller, but individually less capable, satellites. Much of the Space Modernization Initiative (SMI) funding will support further investigation of disaggregated architectures in order to inform decisions on future systems based on operational efficiency, cost and resiliency. Initial studies show the use of hosted payloads could yield operational efficiency, greater resiliency and potential savings over the cost of a free-flying satellite. Demonstrations such as the Commercial Hosted Infrared Payload (CHIRP) are validating these potential benefits as are other preliminary findings.

Mr. ROGERS. 13) How will the Department decide whether to apply disaggregated architecture principles to future space system acquisitions? Who will make the final decision whether a disaggregated approach is used?

General SHELTON. A standardized methodology for creating and analyzing future architectures, including analyses of alternatives, will be employed in order to measure disaggregated architectures against current architectural baselines. System demonstrations will also be used to validate performance and cost estimates and mature new technologies for elements of the new architectures. Decisions will be made through the standard Planning, Programming, Budgeting and Execution process and the acquisition decision process.

Mr. ROGERS. 14) What steps does DOD plan to take, if any, to begin working toward disaggregated architectures? For example, are there plans to test the applicability of disaggregation at a smaller scale to specific mission areas?

General SHELTON. The Department of Defense is already taking steps in this area through Space Modernization Initiative (SMI) efforts that assist in defining new disaggregated architectures in multiple mission areas (e.g., Overhead Persistent Infra-Red and MILSATCOM) and demonstrating projects to validate their performance, cost and technology maturity. These efforts will assist the Air Force in evaluating the concept of disaggregation for decisions on future systems.

Mr. ROGERS. 15) What is the status of the Joint Space Operations Center Mission System Program? Is the program structured to provide to meet requirements at the lowest cost and shortest schedule?

General SHELTON. The Joint Space Operations Center (JSpOC) Mission System (JMS) program was restructured in 2011 to significantly reduce cost and to accelerate the delivery of capabilities to the warfighter. The current program of record provides capabilities to the JSpOC through a series of incremental deliveries rather than a single large package. The program is also specifically designed to maximize the use of existing software products including commercial software whenever feasible and affordable. The incorporation of commercially developed software, as well as Government developed, is key to meeting cost and schedule targets.

JMS Increment-1 was fielded at the JSpOC in late October 2012 and has successfully completed its independent operational test and trial period. Increment-1 is currently in use on a daily basis and has supported a number of recent high-profile events. JMS Increment-2 began integration in April 2013. Increment-2 service packs will be provided to the JSpOC from mid-FY14 and through FY16, with deliveries occurring every six to seven months. The use of discrete service packs within the larger increments provides capability to the warfighter as soon possible.

Mr. ROGERS. 16) With the cancellation of the Spaced Based Surveillance System (SBSS) follow-on program in the FY14 budget request, what is the Air Force position on the need for space situation awareness from satellites? Are there any gaps in coverage?

General SHELTON. With Space Based Space Surveillance (SBSS) Block 10 System becoming operational in August 2012, we continue to meet USSTRATCOM requirements for the timely detect, track, and identification of deep space objects in all regions of space until its end of life (estimated September 2017).

Without an above-the-weather space-based Space Situational Awareness (SSA) system like this, our deep space architecture relies largely on ground-based optical telescopes, which are limited by daylight and weather, and radars which are limited by sensitivity. The resultant sensing gaps afford adversaries freedom of action and delay identification of potential unintentional threats such as maneuvers and conjunctions.

Because of the capabilities and advantages provided by space-based capability, it is critical that we continue to invest in space-based platforms as a part of the SSA

architecture. This will ensure we maintain custody of threats and support threat identification and in turn enable defensive action in deep space.

Given the current budget challenges, Air Force Space Command is exploring options and timing for a follow on space-based platform to preserve this vital capability at an affordable cost.

Mr. ROGERS. 17) There are various efforts in the Department, namely Air Force, Army, and DARPA, to provide rapid, low-cost launch solutions. How do you foresee this type of capability being used by the warfighter? In light of increasing foreign threats to our space systems, how important is it that we prioritize these efforts?

General SHELTON. For many years, the space community has studied responsive capabilities. These studies often have been segmented, looking at only responsive launch, or only responsive satellites. For the concept to be viable, both satellite and launch must be equally responsive, and therein lies the problem. We could easily produce responsive launch vehicle capability, but for the full mission capability to be truly responsive, satellites would need to be ready to respond at the same pace as the booster, likely requiring stored and ready satellites. This approach is too expensive in the current budget climate.

Additionally, unless offensive action has been taken to neutralize the threat that negated existing on orbit capability, responsive systems would be launching into the same threat environment that caused the loss of the original satellite.

We are working with the entire community to ensure viable concepts of operation, coupled with affordability, to drive our work on responsive systems.

Mr. ROGERS. 18) What is being done to monitor any efforts to disrupt or degrade our space capabilities?

General SHELTON. Current systems maintain track of satellites and debris in orbit. In addition, these systems respond to events such as launches, maneuvers and breakups. Further, in concert with our intelligence community partners, we are working to understand the threats those objects or events may pose to our satellites.

To improve those capabilities, Air Force Space Command (AFSPC) has developed a comprehensive Space Situational Awareness (SSA) architecture approach spanning the capability areas. The first increment of that SSA architecture is focused on affording the best mix of near earth and deep space sensors, along with the requisite data integration and exploitation to process the sensor data, integrate it with intelligence, environmental and other data and provide timely, decision quality information to commanders and other users. This architecture will provide a greater capacity for predicting events, creating decision space and enabling action.

To combat the emerging threats to our satellites from cyberspace, AFSPC is collaborating with USSTRATCOM and other space community partners through an initiative called Crystal Defender which is in Phase-II of its analysis, currently conducting a vulnerability assessment on the Global Positioning System (GPS) and analyzing the nuclear command, control, and communications (NC3) architecture. Additionally, focused tiger teams are in place to oversee initiatives that establish individual computer network defense service providers for each space system. Finally, the integration of space and cyber under one command and the lessons learned coming from Crystal Defender enable AFSPC to manage security threats and vulnerabilities of the Air Force Satellite Control Network (AFSCN) with the same rigor that is in place for managing threats in our backbone network for administration, business, and mission systems, the Air Force Information Network (AFIN).

Mr. ROGERS. 19) What is the process to respond to situations where our satellites are interfered with or attacked? Are there established "red lines" and responses?

General SHELTON. Electromagnetic interference (EMI), whether purposeful or non-purposeful, can be detected by the system user, owner/operator, or through deliberate monitoring activities. Once detected, this interference is reported and mitigated through a standard process: the owner/operator will notify the Joint Space Operations Center (JSpOC) located at Vandenberg AFB. The JSpOC will then task assets and request support from the intelligence community to assist in determining the type and source of the interference. If the interference is determined to be purposeful, it is then reported to USSTRATCOM, who will engage with the Department of Defense to determine the best course of action. There are currently no established "red lines" or responses for the attack on a satellite.

Mr. ROGERS. 20) What steps has DOD taken to improve the management of requirements in order to reduce program risk?

Ms. SAPP. The National Reconnaissance Office (NRO) works with its partners in the Department of Defense (DOD) and the Office of the Director of National Intelligence (ODNI) to ensure the cost and risk associated with requirements is understood. This partnership, along with NRO's rigorous acquisition policies and manage-

ment, allow for the responsible management of risk in Major System Acquisition (MSA) programs.

Mr. ROGERS. 21) How can space acquisitions be made affordable during years of budget constraints? What needs to change in the acquisition paradigm, if anything?

Ms. SAPP. The NRO's evolutionary acquisition approach leverages the investments already made in a particular program, and makes adjustments and changes in response to risks and opportunities. By not "re-creating the wheel" for each program, the NRO can advance technology and make any major program changes up front, saving significant costs in the acquisition of such specialized systems.

Mr. ROGERS. 22) Is there an effort to move toward firm fixed-price contracts? Why?

Ms. SAPP. The NRO's contracting policy is to assess each acquisition and utilize the appropriate contract type based on technical, cost, and schedule performance and the risk associated with each of these factors. The NRO does not have a policy that emphasizes the use of any particular contract type. NRO Directorates and Offices are required to brief a proposed acquisition strategy to the NRO Acquisition Strategy Council for each Major System Acquisition 12–18 months prior to release of the solicitation by NRO senior leadership and prior to any required approvals by the program Milestone Decision Authorities at the Joint Intelligence Acquisition Board. A proposed contract type with justification is briefed and reviewed during both forums to ensure it results in reasonable contractor risk and provides the contractor with the greatest incentive for efficient and cost-effective performance.

Mr. ROGERS. 23) What is the process to assess the risk classification of payloads for the Evolved Expendable Launch Vehicle?

Ms. SAPP. The NRO, the National Aeronautics and Space Administration (NASA) and U.S. Air Force (AF) formalized a common approach and criteria for the risk classification of payloads for all missions, including those intended to be launched using the Evolved Expendable Launch Vehicle (EELV) system. The NRO will assess each mission against these common criteria to determine payload risk classification.

Mr. ROGERS. 24) In GAO's annual report on duplication, overlap, and fragmentation, it reported that "Space launch acquisition processes for NASA and DOD are not formally coordinated, duplicate one another, and may not fully leverage the Government's investment because the Government is not acting as a single buyer." Please identify cost-savings opportunities and identify what is being done to reduce duplication and leverage investments.

Ms. SAPP. The NRO has taken significant steps to ensure its launch activities are fully coordinated with the AF and NASA. As noted in the Government Accountability Office report, the three launch agencies have formalized our approach to EELV acquisition in a Memorandum of Understanding. Strategic acquisition planning is discussed at the agency director level at recurring AF–NASA–NRO Summits, while programmatic and tactical planning is addressed at the Government Expendable Launch Vehicle Executive Board (GEEB) and Launch Collaboration Steering Group (LCSG). The GEEB and LCSG provide key mechanisms to foster sharing of acquisition planning and lessons learned across the NASA, AF, and NRO launch communities. The NRO partners with the AF to acquire launches for national security missions, and the NRO/AF EELV block-buy acquisition currently underway seeks to stabilize current EELV suppliers with a 36 core commitment while enabling competition as new launch capability is demonstrated and certified. This strategy was discussed by the three agencies as a means to provide cost savings to all Government EELV users by stabilizing production over the next few years. The NASA keeps the AF and NRO apprised of their commercial cargo and crew acquisition planning and Space Launch System development plans to further enable stabilization of the broader space launch industrial base. Finally, the NRO, AF, and NASA have agreed to a common certification approach for New Entrant launch service providers, and the NRO is leveraging the certification efforts of the AF and NASA in its certification activities. Through these efforts, the Government is able to achieve cost savings and to leverage investments with minimal duplication through the established forums for communication across all management levels.

Mr. ROGERS. 25) What is DOD doing, or planning to do, to define and assess its mission assurance costs and activities, and to what extent will the strategy protect against overly high launch vehicle prices compared with mission assurance changes/efficiencies resulting from these assessments? Further please outline how mission assurance for national security space missions differs from commercial space missions.

Ms. SAPP. In February 2010 the Secretary of the AF commissioned the Broad Area Review X Study to provide an updated assessment on the effectiveness of the EELV mission assurance process. The study recognized that Government mission assurance builds on the launch contractor mission assurance and quality assurance proc-

esses, and recommended that the AF and DNRO should: "Maintain the current mission success/mission assurance focus, and continue to provide resources to support the Mission Assurance process that has resulted in unprecedented levels of Mission Success over the last decade."

The NRO has a dedicated Mission Assurance Team that is focused on maximizing mission success for NRO payloads and provides an independent technical risk assessment to AF EELV system-level mission assurance. The NRO, working with the AF, has refined its contribution to AF-managed EELV fleet mission assurance and continues to collaborate on ways to maintain the highest possible levels of mission success as efficiently as possible.

Most commercial space missions rely on insurance to cover the risk of launch and/or spacecraft failure as well as loss of commercial revenue streams. Government Launch Vehicle Mission Assurance (LVMA) serves as "insurance" for Government missions seeking to increase probability of success in lieu of payment for lost sunk costs. Most Government missions' value to the Nation is well beyond the cost expended for the spacecraft and launch, and Government LVMA helps to ensure that the critical capabilities of our space systems are not lost due to launch failure. Commercial space customers and the insurance underwriters benefit from the Government LVMA which seeks to increase the overall reliability of the launch system, as demonstrated by the current EELV program outstanding success record.

Mr. ROGERS. 26) How is resilience measured and what are the most important steps the U.S. needs to take in order to create space systems that are resilient to threats?

Ms. SAPP. For the NRO, a direct measure of space system resiliency involves assessing the decrease in collection capability as a function of an adversary's counterspace actions. The NRO uses sophisticated modeling tradecraft to help make these assessments. The NRO's modeling tradecraft combines foreign counter-space threat information provided by the Intelligence Community (IC) with the projected effectiveness of the resiliency enhancement(s) in question. The resulting information is then used to calculate the reduction in collection as a function of conflict intensity and time. Due to the variability of the data input, statistical analysis is used to obtain the most likely reduction in collection for different threat levels and resiliency options.

The most important step to creating resilient space systems is achieving the appropriate balance of system hardening, mission operations tradecraft, and architecture diversity. Operational tradecraft, including the use of indications and warning to trigger courses of action and concepts of operation, offers a cost effective, near-term solution to the most likely counterspace threats. Architecture diversity, and its coordinated use, not only results in more timely and actionable intelligence, but enhances the NRO's ability to operate through some of the most challenging threats.

Mr. ROGERS. 27) Please describe the current efforts and priority you are placing on space situational awareness and space protection.

Ms. SAPP. Situational awareness, including the monitoring of space, terrestrial, and cyber threats, is a key element of NRO's survivability strategy. Continuous monitoring of these elements establishes both a baseline of normal activity and changes to the baseline associated with foreign counterspace actions. Such monitoring and awareness are critical for indicating when potential responses/actions may be warranted. Actions available to operators include various courses of action and concepts of operation that either minimize or mitigate counterspace threats. With regard to Space Situational Awareness (SSA), the NRO has key partnerships with the AF to ensure that we have the strongest team possible in addressing these critical threats.

Timely and appropriate response to space situational awareness indications and warning is particularly important due to operational requirements. Because of this, the NRO places a high priority on monitoring, categorizing, and characterizing potential threats through all possible means, domains, and partnerships. To further enhance our capabilities, the NRO is also developing a decision support tool to help satellite operators integrate, visualize, and act upon the situational awareness data. The NRO places a high priority on space protection, though specific details regarding space protection are classified.

Mr. ROGERS. 28) What steps does DOD plan to take, if any, to begin working toward disaggregated architectures? For example, are there plans to test the applicability of disaggregation at a smaller scale to specific mission areas?

Ms. SAPP. The NRO does not have any plans to begin working towards disaggregated architectures, as they do not meet the unique mission needs of our NRO systems. The NRO is taking steps to address resiliency through ground-based and space-based measures and our partnerships with the AF and the IC.

Mr. ROGERS. 29) There are various efforts in the Department, namely Air Force, Army, and DARPA, to provide rapid, low-cost launch solutions. How do you foresee this type of capability being used by the warfighter? In light of increasing foreign threats to our space systems, how important is it that we prioritize these efforts?

Ms. SAPP. The NRO requires reliable, predictable, and affordable launch capability, which we address through our partnership with the AF on launch capabilities. We address foreign threats to our space systems through awareness, protection, diversity and Concepts of Operations (CONOPS).

Mr. ROGERS. 30) What is the process to respond to situations where our satellites are interfered with or attacked? Are there established "red lines" and responses?

Ms. SAPP. The NRO continues to refine a process to better respond to satellite interference and/or attack, but these activities are largely classified. The first element involves determining if the anomalous behavior is the result of environmental activity (e.g., solar activity or weather-related disruption), system anomaly (component or subsystem failures), or counterspace activity. To quickly assess and delineate among these factors, the NRO maintains a team of skilled satellite operators with reach-back support that continuously monitor operations and satellite state-of-health. With respect to counterspace activities, in addition to refining established processes, the NRO is developing a decision support tool that integrates an array of situational awareness and indications and warning sensors that allow satellite operators to anticipate and, when necessary, take appropriate actions to avoid counterspace activities. In cases where anomalous activity is detected, but not anticipated, the decision tool can hasten troubleshooting the situation, thereby facilitating operators taking appropriate and timely actions. In addition, the NRO has established a process and timeline for senior interagency and Congressional leadership notification in the event of suspect or confirmed satellite interference and/or attack. There are few established or prescribed "red lines" other than those captured in current treaty language, for example, not to interfere with national technical means of verification. The NRO is engaged with others in the interagency to include the IC, the Department of Defense, and the State Department to review this and related issues.

Mr. ROGERS. 31) What steps has DOD taken to improve the management of requirements in order to reduce program risk?

Mr. KLINGER. As the Deputy Assistant Secretary of Defense for Space and Intelligence, I am the primary advisor to the Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)) on all issues associated with the DOD end-to-end Space and Intelligence infrastructure. In this role, I am accountable for acquisition oversight and acquisition related matters. Therefore, I am not able to speak authoritatively on this question. However, we are aware that the requirements and acquisition communities are working closely together to reduce program risk and incorporate better buying power principles wherever possible.

Mr. ROGERS. 32) How can space acquisitions be made affordable during years of budget constraints? What needs to change in the acquisition paradigm, if anything?

Mr. KLINGER. The USD(AT&L)'s Better Buying Power 2.0 (BBP 2.0) Initiative is intended to help mitigate this era of severe budget constraints. BBP 2.0 was provided to industry and we have received numerous comments from the commercial satellite industry including suggestions how the Government might improve the efficiency of procurement of commercial satellite systems and services. Subsequently, the Department kicked off a review to determine best practices in teaming with industry to lower costs of space systems and services.

An excellent example of improved affordability is the Evolved Expendable Launch Vehicle (EELV) program. The FY14PB reduced the EELV program budget by almost $1B across the FYDP. This is a direct result of improved communication with our current provider to stabilize the EELV production rate and supply chain. In addition, the Department has taken actions to introduce competition in the EELV program by publishing a new entrant certification process, providing opportunities for new entrants to launch more risk tolerant payloads prior to certification, and establishing early competition opportunities as soon as new entrants are certified.

The Department is continually reviewing our acquisition legislative, policy, guidelines, regulatory or contracting actions which could be taken to improve the Government satellite procurement process along with our acquisition models to ensure space acquisitions are as affordable as possible.

Mr. ROGERS. 33) Is there an effort to move toward firm fixed-price contracts? Why?

Mr. KLINGER. We continually look for better and more efficient ways to acquire the Department's materiel needs. In November 2010, the USD(AT&L) issued Better Buying Power (BBP) 1.0 Guidance for obtaining greater efficiency and productivity

in defense spending, which included guidance on increasing the use of Fixed-Price contracts, where appropriate. Last November, USD(AT&L) issued BBP 2.0 which builds upon this guidance to stress using appropriate contract types while encouraging the use of Fixed Price Incentive contracts for early production. Through the BBP initiatives, we are striving to incentivize productivity and innovation in industry and Government by utilizing the appropriate contract type for each phase of an acquisition. Fixed Price contracts are generally more suitable for the production phase of satellite acquisition since the requirements are firm, the design is mature as demonstrated in developmental testing, and manufacturing processes with qualified suppliers are in place. The Department follows the Congressional direction in section 818 of the John Warner National Defense Authorization Act for Fiscal Year 2007, P.L. 109–364, to select the contract type for a development program at the time of Milestone B approval that is consistent with the level of program risk

Mr. ROGERS. 34) What is the status of the new acquisition strategy for the Evolved Expendable Launch Vehicle program? How did the USAF determine which satellite payloads to set aside for competition, and which programs were part of the ULA block-buy? And, how does the Air Force plan to manage this competition to ensure a level playing field?

Mr. KLINGER. USD(AT&L) approved an amendment to the EELV Acquisition Strategy on February 10, 2013, authorizing the Air Force to order up to 36 rocket cores from United Launch Alliance (ULA) during FY13–17 and to leave open for competition up to 14 additional rocket cores during the same period. The missions reserved for competition are those that (1) meet the performance capabilities (mass to orbit injection) of the potential New Entrant's launch vehicles (as stated by the vendors) and (2) will be ordered after the estimated certification date for the New Entrant's launch vehicles (as stated by the vendors), with a single exception where the cost to compete the launch service was not in the best interest of the Government. The 36 cores that the Air Force is negotiating with ULA are either outside the New Entrant's stated lift capability and/or will be ordered before the New Entrant(s) expect to achieve certification; e.g., only those launch service orders that the New Entrants cannot satisfy are planned for sole-source award to the ULA.

The Air Force is currently developing the detailed plan to compete as many of the 14 cores as soon as the FY15 launch service awards. This plan will address the factors used to ensure a fair and equitable competition. The Air Force plans to obtain USD(AT&L)'s approval of this plan late this calendar year. In addition, the Air Force will award early integration contracts following a new entrant's first successful certification flight to provide insight into launch vehicle to satellite compatibility.

Mr. ROGERS. 35) What is the process to assess the risk classification of payloads for the Evolved Expendable Launch Vehicle?

Mr. KLINGER. As the Deputy Assistant Secretary of Defense for Space and Intelligence, I am the primary advisor to the Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)) on all issues associated with the DOD end-to-end Space and Intelligence infrastructure. In this role, I am accountable for acquisition oversight and acquisition related matters. Therefore, I am not able to speak authoritatively on this question. However, the Air Force is responsible for assessing the risk classification of payloads using the common set of criteria defined in the "Coordinated Strategy Among the US Air Force, the NRO and NASA for New Entrant Launch Vehicle Certification," signed on October 12, 2011.

Mr. ROGERS. 36) In GAO's annual report on duplication, overlap, and fragmentation, it reported that "Space launch acquisition processes for NASA and DOD are not formally coordinated, duplicate one another, and may not fully leverage the Government's investment because the Government is not acting as a single buyer." Please identify cost-savings opportunities and identify what is being done to reduce duplication and leverage investments.

Mr. KLINGER. The concerns cited in the GAO's report are derived from US Space Transportation Policy (NSPD–40), from December 2004, which assigns separate responsibilities to the SECDEF and the NASA Administrator to purchase launch services for national security requirements and civil requirements, respectively. Under "Assuring Access to Space," NSPD–40 assigns responsibilities for acquiring launch services as follows, "2) The Secretary of Defense shall be the launch agent for the national security sector and shall maintain the capability to develop, evolve, operate, and purchase services for those space transportation systems, infrastructure, and support activities necessary to meet national security requirements.", "3) The Administrator of the National Aeronautics and Space Administration shall be the launch agent for the civil sector and shall maintain the capability to develop, evolve, operate, and purchase services for those space transportation systems, infrastructure, and support activities necessary to meet civil requirements, including the ca-

pability to conduct human and robotic space flight for exploration, scientific, and other civil purposes."

Mr. ROGERS. 37) What is DOD doing, or planning to do, to define and assess its mission assurance costs and activities, and to what extent will the strategy protect against overly high launch vehicle prices compared with mission assurance changes/efficiencies resulting from these assessments? Further please outline how mission assurance for national security space missions differs from commercial space missions.

Mr. KLINGER. As the Deputy Assistant Secretary of Defense for Space and Intelligence, I am the primary advisor to the Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)) on all issues associated with the DOD end-to-end Space and Intelligence infrastructure. In this role, I am accountable for acquisition oversight and acquisition related matters. Therefore, I am not able to speak authoritatively on this question. However, the Air Force is the responsible agency for National Security Space Launch and, as such, defines the Department's mission assurance process. I do believe our Mission Assurance costs, which are on the order of 3–5% of the cost of the launch vehicle, are appropriate. In addition, I believe there is a fundamental difference between launching a commercial satellite and a National Security Space satellite that justifies the Department's approach. While a commercial entity can use insurance to offset the financial losses associated with a failure to place the satellite in the correct orbit, the Department loses the capability that that satellite would have provided. These systems take many months or years to regenerate, leaving our national and warfighting users without capability they were planning to have for their missions.

Mr. ROGERS. 38) How is resilience measured and what are the most important steps the U.S. needs to take in order to create space systems that are resilient to threats?

Mr. KLINGER. As the Deputy Assistant Secretary of Defense for Space and Intelligence, I am the primary advisor to the Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)) on all issues associated with the DOD end-to-end Space and Intelligence infrastructure. In this role, I am accountable for acquisition oversight and acquisition related matters. Therefore, I am not able to speak authoritatively on this question. However, I am aware that the intelligence, requirements, and acquisition communities are working closely together to address this question.

Mr. ROGERS. 39) Please describe the current efforts and priority you are placing on space situational awareness and space protection.

Mr. KLINGER. As the Deputy Assistant Secretary of Defense for Space and Intelligence, I am the primary advisor to the Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)) on all issues associated with the DOD end-to-end Space and Intelligence infrastructure. In this role, I am accountable for acquisition oversight and acquisition related matters. Therefore, I am not able to speak authoritatively on this question. However, assuring required space capabilities are available in a contested environment is a top priority for the Department. Space situational awareness is the foundation for all space operations and the key enabler for protecting U.S. interests in space.

In March 2013, the Department and the Office of the Director of National Intelligence jointly established the Space Security and Defense Program (SSDP). The SSDP will serve as the center of excellence to inform options and strategies (materiel, non-materiel, cross-Title 10 and 50 United States Code, and cross-domain) to enable a more resilient and survivable National Security Space Enterprise. As part this effort, the Office of the Director for National Intelligence is establishing a Space Threat Assessment Cell to provide long-term threat assessment and evaluation support to the SSDP.

Mr. ROGERS. 40) How will the Department decide whether to apply disaggregated architecture principles to future space system acquisitions? Who will make the final decision whether a disaggregated approach is used?

Mr. KLINGER. As the Deputy Assistant Secretary of Defense for Space and Intelligence, I am the primary advisor to the Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)) on all issues associated with the DOD end-to-end Space and Intelligence infrastructure. In this role, I am accountable for acquisition oversight and acquisition related matters. Therefore, I am not able to speak authoritatively on this question. However, I am aware that Air Force Space Command is reviewing and evaluating disaggregated architecture principles for future space systems. There will be senior-level Department reviews prior to submission to the Deputy Secretary for final decision about whether a disaggregated approach is used.

Mr. ROGERS. 41) What steps does DOD plan to take, if any, to begin working toward disaggregated architectures? For example, are there plans to test the applicability of disaggregation at a smaller scale to specific mission areas?

Mr. KLINGER. As the Deputy Assistant Secretary of Defense for Space and Intelligence, I am the primary advisor to the Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)) on all issues associated with the DOD end-to-end Space and Intelligence infrastructure. In this role, I am accountable for acquisition oversight and acquisition related matters. Therefore, I am not able to speak authoritatively on this question. However, I am aware that Air Force Space Command is reviewing/evaluating disaggregated architectures. I expect they will assess disaggregated architecture response options as part of the trade space and the need to understand performance issues surrounding proposed architectures.

Mr. ROGERS. 42) There are various efforts in the Department, namely Air Force, Army, and DARPA, to provide rapid, low-cost launch solutions. How do you foresee this type of capability being used by the warfighter? In light of increasing foreign threats to our space systems, how important is it that we prioritize these efforts?

Mr. KLINGER. As the Deputy Assistant Secretary of Defense for Space and Intelligence, I am the primary advisor to the Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)) on all issues associated with the DOD end-to-end Space and Intelligence infrastructure. In this role, I am accountable for acquisition oversight and acquisition related matters. Therefore, I am not able to speak authoritatively on this question. However, I am aware all applicable communities are collaborating on this important issue.

Mr. ROGERS. 43) There have been major advances in Overhead Persistent Infrared with the launch of the Space-Based Infrared System. Are we leveraging this capability to the fullest extent? What challenges and opportunities are ahead?

Mr. KLINGER. I agree with the comment General Shelton made during the hearing, stating "we have not even scratched the surface" in exploiting and leveraging the Space-Based Infrared System (SBIRS) to its fullest extent. Air Force Space Command, as the command responsible for operations and acquisition of the SBIRS system, continues to make progress to further leverage the capabilities of the on-orbit spacecraft and sensors, in conjunction with NASIC, NGA, and the NRO.

While it is most appropriate for the Air Force to provide specific operational plans, the OPIR community continues working to leverage the strengths and expertise of each other's respective organizations to effectively operate the OPIR Enterprise to address both existing requirements and emerging threats in a cost-conscious and affordable way. The ground segment has sought to exploit our OPIR sensors more effectively by introducing new processing techniques, fusing data streams, and adopting common mission management tools. The ground segment has also sought to make both processed and raw data more accessible to a wider base of users. We have accomplished much, but have more to do in this area.

Looking forward, many challenges and opportunities exist. The DOD and IC will continue to cooperate in the development of new sensors, technology, tradecraft, sources, and collaborative strategies while improving cost performance and ensuring mission functional availability. The objective is an effective and affordable OPIR Enterprise that will continue to provide a key strategic advantage for dealing with emerging threats and enduring national security challenges of the 21st century.

Mr. ROGERS. 44) Are we procuring commercial satellite services in the most efficient way, and if not, what opportunities for improvement are there? Also, who has sole responsibility for satellite communications in the Department?

Mr. KLINGER. In response to the USD(AT&L) announcement of his Better Buying Power 2.0 Initiative some members of the commercial SATCOM industry provided some suggestions to the DOD on how the DOD might improve the efficiency of procuring commercial SATCOM services. The Department has kicked off a review to determine any near-term legislative, policy, regulatory or contracting actions which could be taken to improve the existing Government SATCOM procurement process.

There is no sole responsibility for satellite communications within the Department. USD(AT&L) has responsibility for MILSATCOM acquisition programs, DOD CIO has the responsibility for SATCOM policy, and DISA has the responsibility for commercial SATCOM contracting.

Mr. ROGERS. 45) What is the process to respond to situations where our satellites are interfered with or attacked? Are there established "red lines" and responses?

Mr. KLINGER. As the Deputy Assistant Secretary of Defense for Space and Intelligence, I am the primary advisor to the Under Secretary of Defense for Acquisition, Technology and Logistics (USD(AT&L)) on all issues associated with the DOD end-to-end Space and Intelligence infrastructure. In this role, I am accountable for acquisition oversight and acquisition related matters. Therefore, I am not able to

speak authoritatively on this question. However, we are aware that there are currently no established "red lines" or responses for the attack of an on orbit satellite.

The Office of the Under Secretary of Defense for Policy published the DOD Space Policy, updated in October 2012 and it outlines the Department's multilayered approach to deterrence in the space domain. The policy also declares that purposeful interference with U.S. space systems and other space systems upon which the U.S. relies is irresponsible in peacetime and may be escalatory in a crisis.

Mr. ROGERS. 46) How can space acquisitions be made affordable during years of budget constraints? What needs to change in the acquisition paradigm, if anything?

Mr. LOVERRO. The Department has already begun to make great strides in reducing the cost of space acquisition. Using the Efficient Space Procurement (ESP) authority granted by Congress and by following the precepts within the Under Secretary of Defense for Acquisition, Technology, and Logistics Better Buying Power initiatives, Air Force Space Command (AFSPC) has already made substantial progress in reducing the cost of multiple production satellites, notably the most recent Wideband Global Service (WGS) satellites, and the Advanced Extremely High Frequency (AEHF) satellites. The WGS system as a whole also benefits from the international cooperative arrangements that the Air Force has negotiated to increase the number of production satellites and drive down the cost for all.

In general, these types of good business strategies can be applied across most space acquisitions, and AFSPC is in the process of applying these same strategies to the Space-Based Infrared System (SBIRS), the Global Positioning System (GPS), and the Evolved Expendable Launch Vehicle (EELV) program.

Still, more can be done. Greater communication and coordination with industry in those areas where commercial space has a substantial footprint and increased cooperation with allies and partners can both continue to drive down space acquisition cost and create more resilient space capabilities. To that end, the Department is already working with new entrant commercial launch providers, and has entered into multiple space situational awareness sharing or cooperative arrangements. We have partnered with Taiwan on the COSMIC–2 space weather system, effectively cutting the cost of that system by more than two-thirds.

We need to expand our leveraging of allied space capabilities, where operationally suitable. Our allies and partners have significant and growing space-based capabilities in a range of mission areas. By leveraging their systems, we can augment our capabilities, add diversity and resilience to our architectures, and complicate the decision-making of potential adversaries all while reducing cost. On the commercial side, we need to become more astute buyers of commercial satellite communication (SATCOM) services by exploring innovative approaches, such as multi-year contract authority or co-investment for commercial space services. Additionally, we believe hosted payloads and disaggregated architectures have the potential to allow us to take advantage of the most competitive sectors of our space market and drive down costs further. The Commercially Hosted Infrared Program (CHIRP) demonstration showed the advantages of this approach and the AFSPC Hosted Payload Indefinite/Indefinite Delivery allows the Department to further explore its long term benefits.

Mr. ROGERS. 47) Is there an effort to move toward firm fixed-price contracts? Why?

Mr. LOVERRO. The specific circumstance of an acquisition is the most important determinant of the type of contract to be issued. The Department is exploring methods to improve our acquisition processes, energize the U.S. industrial base, and enhance technological innovation. We are striving to ensure the industrial base is robust, competitive, flexible, healthy, and delivers reliable space capabilities on time and on budget. The Department follows the congressional direction in section 818 of the John Warner National Defense Authorization Act for Fiscal Year 2007 (P.L. 109–364) to select the contract type for a development program that is consistent with the level of program risk at the time of Milestone B approval.

In some cases, we have found that these goals can be best accomplished by expanding the traditional focus from primarily cost-plus to those that include fixed price arrangements. Such was the case for both SBIRS and AEHF where the baseline was firm and production processes were mature. Similarly, the Air Force intends to investigate whether to buy the next set of GPS III satellites under fixed price, and/or to renegotiate several existing cost-plus GPS III satellite contracts, if they conclude a sufficient level of maturity has been reached on that program and if it is in the program's best interests.

In general, when baselines are firm, production processes mature, Government and contractor oversight processes are settled, and technology risk has been eliminated, the move to fixed price arrangements can be beneficial for both the contractor and the Department. That normally happens as systems enter production. But it

can also be true for developmental programs if the acquisition was structured correctly. Such is the case for the Air Force Space Fence program which spent the first 5 years establishing the right conditions for a fixed price development, significantly driving down both cost and risk in the process.

Mr. ROGERS. 48) In January 2012, the Secretary of State announced a decision to initiate formal negotiations with the European Union and other space-faring nations to develop an International Code of Conduct for Outer Space Activities. What is the status of these activities? What are the advantages and disadvantages of negotiating and signing onto such a Code? What national security considerations should the Department take into account as it reviews such a proposal? How do we balance increased cooperation with assured access and freedom of action?

Mr. LOVERRO. Negotiations for the International Code of Conduct are underway. As noted in the DOD Space Policy, the Department is working with interagency, international, and commercial partners to define and promote safe and responsible space operations. The Department of Defense is actively working with the Department of State to conduct bilateral and multilateral discussions with allies and other space-faring nations in support of a non-legally binding International Code of Conduct for Outer Space Activities. The congested and contested space environment presents challenges for all space-faring nations. Efforts such as the proposed Code can help increase awareness, enhance spaceflight safety, and prevent mishaps, misperceptions, and mistrust, thereby helping to ensure that access to space is preserved for all. The proposed Code, drafted as a non-legally binding set of guidelines, calls on subscribing states to refrain from activities that create long-lived debris and to provide notification of certain space activities, including those that might risk creating debris. Space debris is a growing concern for all space-faring nations. Additionally, the proposed Code reinforces key space norms internationally that the U.S. Government has already endorsed but that are not universally followed, including pre-launch notifications under the Hague Code of Conduct, UN Debris Mitigation Guidelines, and safety of flight practices such as sharing collision warning information.

Importantly, the proposed Code explicitly recognizes nations' inherent right of self-defense. The Code would not constrain either the development of the full range of space capabilities, or the ability of the United States to conduct necessary operations in crisis or war. As the Secretary of State noted in January 2012, the United States would not subscribe to a Code that in any way constrains our national security-related activities in space or our ability to protect the United States and our allies.

Mr. ROGERS. 49) The Department has made recent efforts to engage in further collaboration with the international community regarding space situational awareness. What policies govern the sharing of data associated with space situational awareness? What are the benefits and risks of sharing information?

Mr. LOVERRO. Title 10 U.S. Code Section 2274, Space Situational Awareness (SSA) Services and Information, authorizes the Secretary to provide various space situational awareness services and information, and to receive space situational awareness data and information. Additionally, the 2010 National Space Policy, the 2011 National Security Space Strategy, and the 2012 Department of Defense Space Policy call for expanding international cooperation and increasing U.S. leadership to promote the sustainable and responsible use of space.

Space Situational Awareness (SSA) is fundamental to all space operations, from launch to on-orbit operations to re-entry activities. As the National Security Space Strategy states, shared awareness of spaceflight activity must improve in order to foster global spaceflight safety and help prevent mishaps, misperceptions, and mistrust. Effective SSA requires cooperation—we cannot do it alone. U.S. Strategic Command has concluded 37 arrangements with commercial owner/operators and two arrangements with foreign governments. The Department continues to negotiate additional SSA sharing agreements with both commercial and international operators, and to explore the joint development and operation of SSA sensors with allies and partners.

Sharing SSA data, services, and information with Government, intra-governmental, and commercial satellite owner/operators helps to improve spaceflight safety by improving space object databases, establishing common international data standards and data integrity measures, disseminating predictions of space object conjunctions and close approaches, and supporting other measures to preserve the space environment.

Mr. ROGERS. 50) How is resilience measured and what are the most important steps the U.S. needs to take in order to create space systems that are resilient to threats?

Mr. LOVERRO. Resilience is measured in both qualitative and quantitative terms. Qualitatively, the Department of Defense defines resilience for space as the ability of an architecture to support the functions necessary for mission success in spite of hostile action or adverse conditions. An architecture is "more resilient" if it can provide these functions with higher probability, with shorter periods of reduced capability, and across a wider range of scenarios, conditions and threats.

As this definition is less than two years old, DOD organizations have now begun to refine ways to conduct quantitative analysis of the resilience of space systems during the budget review and space analysis of alternatives (AOA) processes. These quantitative measurements will, necessarily, be different for different space mission areas, space systems, and other aspects of the space enterprise.

As we look to the future, resilience will be achieved by pursuing a multifaceted approach across all space systems. These will include further incorporating and encouraging a more competitive U.S. commercial space service industry, integrating space capabilities from allied and partner nations, pursuing a more disaggregated model for many system architectures including less complex systems and hosted payloads, and investigating the role of reconstitution.

Resilience may not be solely an internal architecture characteristic. Some alternative orbitology or basing modes may make it easier for external space surveillance awareness sensors to provide warning of impending attack and time for potential defensive actions to be taken.

Mr. ROGERS. 51) Please describe the current efforts and priority you are placing on space situational awareness and space protection.

Mr. LOVERRO. Space Situational Awareness (SSA) is fundamental to all space operations and underpins DOD's space strategy. To protect our high-valued space assets from both unintentional damage as well as hostile interference, we must maintain an awareness of the space environment—one that is increasingly becoming more congested, contested, and competitive. U.S. Strategic Command is establishing SSA sharing arrangements with commercial and international satellite owner/operators to enhance safety of flight. As the National Security Space Strategy notes, shared awareness of spaceflight activity must improve in order to foster global spaceflight safety, as well as to help prevent mishaps, misperceptions, and mistrust.

Additionally, we have made significant progress in pursuing elements of our future SSA architecture. The Space-Based Space Surveillance System (SBSS) became operational last year and the Defense Advanced Research Projects Agency (DARPA) is successfully testing its space surveillance telescope (SST). We have concluded negotiations with Australia to move a C-band SSA radar to that nation, and with the help of Congress, that effort is now underway. We are pursuing a similar arrangement with DARPA's SST. And the Department has made a substantial investment in the Space Fence system and is preparing to award a full development contract in FY 13.

We also continue to increase our focus on protection. To that end, in March of this year, we established the Space Security and Defense Program, which will pursue studies aimed at providing space protection capabilities for all U.S. space forces. We have placed increased emphasis on this program through the President's budget submission for fiscal year 2014. We have ongoing investments in the Global Positioning System (GPS) modernization efforts to emplace a far more secure and jam resistant space and user equipment M-code system and also increase the cyber security of the GPS control segment. We are also beginning efforts in other areas, such as the Wideband Global System to enhance jam resistance. Finally, we have made substantial strides in defining and fielding an advanced command and control system through the Joint Space Operations Center (JSpOC) Mission Systems (JMS) program to help us better understand and warn of possible threats to our systems.

Mr. ROGERS. 52) There are various efforts in the Department, namely Air Force, Army, and DARPA, to provide rapid, low-cost launch solutions. How do you foresee this type of capability being used by the warfighter? In light of increasing foreign threats to our space systems, how important is it that we prioritize these efforts?

Mr. LOVERRO. Timely, low-cost launch capability might be one part of a capability to allow reconstitution of a space-based capability should it be degraded by attack or mishap. The role of reconstitution in a resilient architecture is still being investigated and the efforts by the Air Force, Army, and DARPA help serve to provide the data through demonstration that would allow those architectural trades to be made.

For example, the U.S. Army Space and Missile Defense Command's (SMDC) Soldier-Warfighter Operationally Responsive Deployer for Space (SWORDS) is an effort to develop a relatively low-cost nanosatellite launch system for the U.S. Army. The Department approved SWORDS as a 2012 Joint Capability Technology Demonstration (JCTD).

Additionally, DARPA's Airborne Launch Assist Space Access (ALASA) system is designed for launch from an aircraft to improve performance, reduce range costs, and enable more frequent missions. ALASA completed initial trade studies and a market/business case analysis in fiscal year 2011, and has entered into a Design Risk Reduction phase.

At this point, it is too early to commit to responsive launch as a high priority until those demonstration and trades are complete.

Mr. ROGERS. 53) Are we procuring commercial satellite services in the most efficient way, and if not, what opportunities for improvement are there? Also, who has sole responsibility for satellite communications in the Department?

Mr. LOVERRO. We are not procuring commercial satellite communications (SATCOM) services in the most efficient manner. The commercial business model looks for a return of initial investment within 3–5 years. As such, the cost of a commercial SATCOM lease must include all the amortization to achieve that return for the service provider. While longer-term leases lower the bill they can only reduce the cost of business risk encompassed in a one-year lease (about 10 percent), but they still bear the huge expense of investment recoupment. In order to do better, the Department should begin to explore innovative partnerships with industry that involve a DOD capital investment and shared access across a global footprint. This approach has the potential for far greater savings while significantly enhancing both DOD resilience and long term commercial stability.

Although historically there has been no component with sole responsibility for satellite communications within the Department, the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD/AT&L) has responsibility for military SATCOM (MILSATCOM) acquisition programs; the DOD Chief Information Officer (DOD/CIO) has the responsibility for SATCOM policy; and the Defense Information Systems Agency (DISA) has the responsibility for commercial SATCOM contracting. DOD's current efforts to examine how the Department procures SATCOM includes addressing this issue. DOD/CIO, for example, has recently initiated a SATCOM governance construct, and SATCOM coordination occurs as part of the actions of the Defense Space Council. In addition, USD/AT&L and DOD/CIO have jointly launched a Commercial Satellite Study to examine ways to better leverage, integrate, and acquire commercial satellite (COMSATCOM) services.

Mr. ROGERS. 54) What is the process to respond to situations where our satellites are interfered with or attacked? Are there established "red lines" and responses?

Mr. LOVERRO. There are currently no established "red lines" or responses for the attack of an on-orbit satellite. The DOD Space Policy, updated in October 2012, outlines the Department's multilayered approach to deterrence in the space domain. The policy also declares that purposeful interference with U.S. space systems and other space systems upon which the United States relies is irresponsible in peacetime and may be escalatory in a crisis

Mr. ROGERS. 55) Please describe the urgent warfighter requirement that led DISA to procure satellite services from the Chinese company. When you testified, you stated that this was done in response to a JUON. Is this still your best understanding of the facts?

Mr. LOVERRO. Beginning in mid-2012, U.S. Africa Command (USAFRICOM) required wider geographic coverage using a single satellite to cover the entire African continent. This bandwidth is to support intelligence, surveillance, and reconnaissance (ISR) operations in the eastern, central, and southern portions of the continent. These operations range from counter-piracy to counter-Lord's Resistance Army (LRA), plus a host of other operations. The bandwidth also supports coalition networks enabling time-sensitive information sharing with African partner nations that help support counter-Violent Extremist Operations and the USAFRICOM Theater Campaign Plan.

With regards to whether this was a Joint Urgent Operational Need (JUON), while I indicated during testimony that we were leasing some satellite services from a Chinese company to support a JUON, as we continued to analyze the situation, I learned that USAFRICOM's need, although operationally critical and requiring expedited service, was not in fact a JUON.

QUESTIONS SUBMITTED BY MR. LANGEVIN

Mr. LANGEVIN. 56) As the Air Force and, to some extent, the National Reconnaissance Office currently fund infrastructure and other facility support costs for the incumbent provider, in order to help the committee understand the current arrangement of the contract with the incumbent, can you describe why a cost-plus vehicle is in place, given the maturity of the program?

General SHELTON. The Phase 1 Evolved Expendable Launch Vehicle (EELV) Launch Capability (ELC) efforts will continue under the Cost Plus Incentive Fee (CPIF) construct. The EELV program requires operational flexibility to meet its National Security Space (NSS) mission. ELC provides the program flexibility to manage changes to mission requirements without Request for Equitable Adjustments (REAs) or schedule penalties (e.g., launch slips due to satellite vehicle acquisition issues, first time integration delays or anomaly resolution from a previous mission). The Air Force is examining options to restructure ELC to allocate appropriately the discrete and unambiguous costs to the launch vehicle and each individual payload customer. The plan is to incorporate these adjustments into the Phase 1 contract and consider them for future acquisition phases of the program.

Mr. LANGEVIN. 57) In last year's hearing, General Shelton, in a response to a question for the record, you stated that you plan to meet warfighter needs for responsive space capabilities through programs of record and mechanisms such as the Joint Urgent Operational Needs process. Given that ORS is intended to foster low-cost launch methods, as well as common design and interfacing methods, and that ORS is zeroed out in the FY14 budget, I'm curious as to how you propose to address the problem of space responsiveness through existing procurement programs and a variety of initiatives that, according to the GAO, have not been planned for in a very robust or strategic manner.

General SHELTON. The Department of Defense (DOD) understands the importance of the Operationally Responsive Space (ORS) concept and recognizes the progress made under the ORS Office. In accordance with the FY13 NDAA, the transition of the ORS Office to the Space and Missile Systems Center (SMC) will be formalized in June 2013. DOD is currently incorporating ORS lessons learned and responsive processes into SMC processes and programs to ensure it continues to develop responsive and affordable space capabilities.

QUESTIONS SUBMITTED BY MR. GARAMENDI

Mr. GARAMENDI. 58) The U.S. Air Force announced late last year that certified New Entrants would be allowed to compete along with ULA for up to 14 rocket cores through FY17. Given that the incumbent provider currently receives over $1.2B annually in cost-plus payments under the Launch Capability contract line, how does the Air Force intend to ensure that the competition will occur on a level playing field when the incumbent competes against New Entrants? What specific actions will the Air Force take to ensure that the incumbent properly allocates ELC payments in a competition against New Entrants? Will ULA be allowed to bid only a launch service price (marginal price) when it competes against a New Entrant's full price, since the Government is paying for ULA's fixed costs?

General SHELTON. We have not yet determined the specific methods to address Evolved Expendable Launch Vehicle (EELV) Launch Capability (ELC) costs in the New Entrant competitions. However, they will be addressed in the Source Selection Plan. The details of the competition are currently being developed and will ensure the best value for the Government among all certified providers and will be conducted in accordance with Defense Federal Acquisition Regulations.

Mr. GARAMENDI. 59) Given that the Air Force and, to some extent, the National Reconnaissance Office currently fund infrastructure and other facility support costs for the incumbent provider, can you help us understand why the funding of fixed costs requires a cost-plus contract? What infrastructure requirements are unknown at this time?

General SHELTON. The Phase 1 Evolved Expendable Launch Vehicle (EELV) Launch Capability (ELC) efforts will continue under the Cost Plus Incentive Fee (CPIF) construct. The EELV program requires operational flexibility to meet its National Security Space (NSS) mission. ELC provides the program flexibility to manage changes to mission requirements without Request for Equitable Adjustments (REAs) or schedule penalties (e.g., launch slips due to satellite vehicle acquisition issues, first time integration delays or anomaly resolution from a previous mission). The Air Force is examining options to restructure ELC to allocate appropriately the discrete and unambiguous costs to the launch vehicle and each individual payload customer. The plan is to incorporate these adjustments into the Phase 1 contract and consider them for future acquisition phases of the program. Range requirements are considered to be sufficiently mature for a fixed-price contract and, as a result, the Government is in source selection now to select a range provider on a fixed-price incentive fee vehicle.

Mr. GARAMENDI. 60) Space launch procurement is the single largest line item in the Air Force space budget. The Government Accountability Office (GAO) has re-

peatedly argued that the Air Force can generate significant savings by reintroducing competition into its space launch procurement program. What savings do you envision in the Evolved Expendable Launch Vehicle program associated with competition?

General SHELTON. Based on the Office of the Secretary of Defense Cost Assessment and Program Evaluation (OSD CAPE) independent cost estimate (ICE), implementation of the Air Force Evolved Expendable Launch Vehicle acquisition strategy in FY13 is projected to save $1.1B over the Future Years Defense Program as compared to the FY12 budget assumptions from FY13–18. These savings were factored into the FY14 Air Force budget submission.

Mr. GARAMENDI. 61) The Launch Capability cost-plus contract structure was instituted in 2006 as a measure to achieve "assured access" for the Government by maintaining the industrial base capacity of the only remaining domestic company capable of conducting space launch. Air Force has now recognized the existence of multiple new providers. Once these New Entrants are certified and competing for all launches in the program, does the DOD have a plan to phase out the ELC cost-plus contract?

General SHELTON. The specific method in which the current incumbent Evolved Expendable Launch Vehicle (EELV) Launch Capability (ELC) and EELV Launch Services (ELS) costs will be competed with new entrants has yet to be determined, but will be addressed in the Source Selection Plan. The details of the competition are being developed and will ensure the best value for the Government among all certified providers and will be conducted in accordance with Federal Acquisition Regulations.

Mr. GARAMENDI. 62) I would like more information on space-based infrared systems. What is its capability and purpose?

General SHELTON. Space Based Infrared System (SBIRS) is an infrared-sensing satellite that supports four missions: Missile Warning (MW), Missile Defense (MD), Battlespace Awareness (BA), and Technical Intelligence (TI).

Missile Warning: SBIRS provides reliable, unambiguous, timely, and accurate MW information to the Missile Warning Center (MWC), North American Aerospace Defense Command (NORAD), National Command Authority (NCA), Combatant Commanders, and allies. This mission includes both global and theater functional requirements to support strategic and theater ballistic MW, and the notification and implementation of passive defense and force posturing.

Missile Defense: SBIRS supports MD by providing missile event queuing to the Missile Defense Agency (MDA) systems. The MD mission includes both national and theater functional requirements to support active MD and attack operations against hostile forces.

Battlespace Awareness: SBIRS provides non-missile threat warning data, in support of Battlespace Awareness for battle damage assessment and intelligence information for land, sea, air, and space decision support to Combatant Commanders, Joint Task Force Commanders, and other users.

Technical Intelligence: SBIRS supports the National Geospatial Agency (NGA) TI mission by providing threat performance and infrared (IR) target signature data to warfighters and weapons developers; provides target classification and identification profiles and algorithms to support SBIRS operational missions; and monitors and provides policymakers and other users' information on observed military tactics, new foreign technology development, arms control compliance, and proliferation activities.

Mr. GARAMENDI. 63) Given that the Air Force and, to some extent, the National Reconnaissance Office currently fund infrastructure and other facility support costs for the incumbent provider, can you help us understand why the funding of fixed costs requires a cost-plus contract? What infrastructure requirements are unknown at this time?

Ms. SAPP. The AF is currently negotiating the Launch Capability contract with the incumbent provider, and would be better suited to respond with specific details of the contract structure.

QUESTIONS SUBMITTED BY MR. BRIDENSTINE

Mr. BRIDENSTINE. 64) DOD is currently evaluating options to move us away from the Defense Meteorological Satellite Program. Can you share with us the status of this "architecture study"? When can members of the committee expect a final decision on the way forward?

Mr. LOVERRO. A comprehensive Analysis of Alternatives for a replacement capability for the Defense Meteorological Satellite Program (DMSP) is currently ongoing

as part of a study on DOD's Space-Based Environmental Monitoring (SBEM) capabilities. The first phase of the study included an analysis of military utility and effectiveness, and was completed in March 2013. The current Analysis of Alternatives work, which is scheduled to be completed at the end of June 2013, will help guide the Department's strategy at the end-of-life of DMSP. The study's final report is expected to be completed by August 2013.

Mr. BRIDENSTINE. 65) The Department has implemented an interesting capacity-sharing process for the Wideband Global SATCOM constellation. I think that signing Memorandums of Understanding with partner nations is a "win-win" for the U.S. and these countries. Can you talk about the cost savings associated with the MOU-model of satellite operation? Do you intend to use this model for other national security space systems?

Mr. LOVERRO. The Department's partnership with six countries on Wideband Global SATCOM (WGS) has expanded the WGS constellation size and capacity, contributing to interoperability between participating nations, improving the ability of the United States and partner nations to perform space-enabled missions, and increasing the inherent resilience of this system. In November 2007, we signed a memorandum of understanding (MOU) with Australia, resulting in the purchase of the sixth WGS satellite. In January 2012, a second MOU, signed with Canada, Denmark, Luxembourg, the Netherlands, and New Zealand, resulted in the purchase of an additional 10th satellite. Together with our six international partners, we have invested $10 billion in this system, expanding capability at minimal cost to the U.S. Air Force. The WGS agreements leverage $1.3 billion in partner funds while providing over 40 percent more capacity for U.S. warfighters.

We believe this model is one of many possible partnering models to help reduce system cost while increasing resilience. Different but similar arrangements have been negotiated with the government of Australia to emplace a C-band Space Surveillance Radar there with part of the cost borne by the United States and part by Australia. We also envision a joint operating model for that system. We hope to extend that model with the conclusion of an MOU on DARPA's space surveillance telescope. We anticipate additional opportunities in the position, navigation, and timing mission areas, as well as commercial remote sensing. While these will differ in character to the WGS MOU, they seek the same goal of enhancing U.S. and allied capabilities at reduced cost, and with increased resilience, by appropriately sharing space capabilities. We are also interested in exploring if this model can be extended to the commercial world, especially in the SATCOM arena as opposed to the expensive short-term lease arrangement we now use.

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