

Stenographic Transcript
Before the

Subcommittee on Strategic Forces

COMMITTEE ON
ARMED SERVICES

UNITED STATES SENATE

TO RECEIVE TESTIMONY ON THE DEPARTMENT OF DEFENSE
SPACE ACTIVITIES IN REVIEW OF THE DEFENSE
AUTHORIZATION REQUEST FOR FISCAL YEAR 2025 AND THE
FUTURE YEARS DEFENSE PROGRAM

Tuesday, May 21, 2024

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1 TO RECEIVE TESTIMONY ON THE DEPARTMENT OF DEFENSE SPACE
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5 Tuesday, May 21, 2024
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7 U.S. Senate

8 Subcommittee on Strategic Forces

9 Committee on Armed Services

10 Washington, D.C.
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12 The subcommittee met, pursuant to notice, at 9:30 a.m.
13 in Room SR-222, Russell Senate Office Building, Hon. Angus
14 King, chairman of the subcommittee, presiding.

15 Subcommittee Members Present: King [presiding],
16 Warren, Rosen, Kelly, Fischer, Rounds, Cramer, and
17 Tuberville.
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1 OPENING STATEMENT OF HON. ANGUS KING, U.S. SENATOR
2 FROM MAINE

3 Senator King: The hearing of the Strategic Forces
4 Subcommittee of the Committee on Armed Services is now in
5 session. I want to thank our witnesses for joining us
6 today, and I appreciate your service to the country.

7 The purpose of our hearing today is to examine the
8 fiscal year 2025 budget of the Space Force. Mr. Hill, I
9 understand that you are testifying on Space Force policy
10 issues in lieu of Dr. Plumb, who has recently left us. I
11 will want to know the actions that your office has taken to
12 help lower the classification levels of space programs so
13 that the warfighter can use them more effectively. Many of
14 these programs are so highly classified that few, if any,
15 can use them, prohibiting information sharing in a time of
16 conflict.

17 Mr. Calvelli, you are responsible for the acquisition
18 of space assets. In October of 2022, you issued a memo on
19 space acquisition tenets that outlined such commonsense
20 objectives as don't launch satellites before the ground
21 system to use the data is complete -- pretty good advice;
22 thank you -- as well as efforts to hold the industry
23 accountable for the systems that they build. I would like
24 to know if you believe that those tenets are having an
25 impact that you hoped that they would back in October of

1 2022.

2 General Guetlein, this is year four of the Space Force
3 as a separate Title 10 service. If you look at the wall,
4 your flag is there, along with the other service flags. Now
5 that you are a Title 10 service I hope that you can share
6 with us how you are training to defend our assets in space
7 as well as to help the warfighter on the ground achieve
8 their objectives if called upon.

9 For fiscal year 2025, the Space Force is requesting
10 \$29.4 billion, which is a \$600 million decrease from the
11 fiscal year 2024 request of \$30 billion. General Guetlein,
12 it will be important to explain to the committee in open
13 session how this essentially flat budget, actually declining
14 budget, is impacting your ability to train and equip our
15 Guardians to support the combatant commands.

16 Again, I want to thank our witnesses for joining us,
17 and after our short opening statements we will have rounds
18 of 5-minute questions of our witnesses.

19 Senator Fischer.

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1 STATEMENT OF HON. DEB FISCHER, U.S. SENATOR FROM
2 NEBRASKA

3 Senator Fischer: Thank you, Senator King. Mr. Hill --
4 are you correcting us?

5 Senator King: Yes. He was correcting my
6 pronunciation. GOOT-line. Sorry about that.

7 General Guetlein: Thank you, Senator.

8 Senator King: I am sure I am not the first person to
9 ever mispronounce your name.

10 General Guetlein: No, sir. I have grown up with that
11 name and heard it every which way.

12 Senator King: Thank you, sir.

13 Senator Fischer: Secretary Calvelli, Mr. Hill, General
14 Guetlein, thank you for being here today and for sharing
15 your perspectives with this subcommittee, and thank each of
16 you for your service.

17 As this subcommittee knows, our capabilities in space
18 provide our forces with unparalleled communications,
19 targeting, and intelligence. Every other service relies on
20 Space Force capabilities to close the kill chain. Our
21 adversaries know this, and space is no longer a safe haven.
22 It has not been for years, and it has taken the Department
23 far too long to openly acknowledge this.

24 The fact is we need to be investing more in both
25 offensive and defensive space systems to counter our

1 adversaries and safeguard our assets on orbit. And we need
2 a space acquisition system that can do so effectively and
3 quickly. I look forward to hearing about progress being
4 made in space acquisition and what more can be done.

5 However, we cannot maintain space dominance unless we
6 provide the Space Force with the resources needed to do so.
7 I was disappointed by the President's budget request, but I
8 hope to work with my colleagues on this subcommittee and on
9 the Appropriations Committee to provide funding for
10 additional space systems, including one on General Whiting's
11 unfunded priorities list.

12 Thank you, Mr. Chairman.

13 Senator King: Mr. Hill, are you leading off?
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1 STATEMENT OF JOHN D. HILL, DEPUTY ASSISTANT SECRETARY
2 OF DEFENSE FOR SPACE AND MISSILE DEFENSE, DEPARTMENT OF
3 DEFENSE

4 Mr. Hill: Thank you Chairman King and Ranking Member
5 Fischer and distinguished members of the committee. Thank
6 you for inviting us to testify on the Department's fiscal
7 year 2025 space budget.

8 We are clearly in a time of rapid change in the space
9 strategic environment, one which does not favor the slow or
10 those resistant to change. China and Russia are rapidly
11 fielding space and counter-space capabilities to hold the
12 Joint Force at risk and to deny us the space-based services
13 on which we rely. The scale and scope of the threats in
14 space present significant risks to the American people, to
15 our national interests, to allies, and partners.

16 To meet these challenges, and working within the
17 constraints of the Fiscal Responsibility Act, the
18 President's fiscal year 2025 budget requests \$33.7 billion
19 for space. Some of the critical investments include \$2.4
20 billion for National Security Space Launch; \$1.5 billion for
21 more resilient positioning, navigation, and timing; \$4.2
22 billion for more resilient and protected satellite
23 communications and the Space Development Agency's
24 proliferated Low Earth Orbit transport layer; \$4.7 billion
25 to develop new missile warning and missile tracking

1 architectures; and \$12.3 billion for a range capabilities to
2 increase the resiliency of our existing architectures and
3 protect our interests in space during competition, crisis,
4 and conflict.

5 In addition to our space investments, the Department
6 has made significant progress over the last 2 years on four
7 key space strategy and policy priorities, which I have
8 detailed at length in my written testimony. These are space
9 control, space cooperation, space classification, and
10 commercial space integration.

11 In short, we have obtained presidential guidance to
12 assure our space missions and to protect and defend the
13 Joint Force from space-enabled attacks. We have
14 significantly expanded our space cooperation with allies and
15 partners, charting a path towards true combined operations
16 in space that will strengthen our collective deterrence and
17 defense. And we have overhauled the Department's space
18 classification policy to remove unnecessary barriers to
19 information flow throughout the Joint Force and with our
20 partners and with industry. And we have released the first-
21 ever Department of Defense Commercial Space Integration
22 Strategy to harness the commercial sector's incredible
23 innovation and to enhance our capability, capacity,
24 resilience, and mission assurance.

25 Going forward, the Department will continue to press on

1 all four of these lines of effort. I believe the progress
2 we have already made together will pay dividends for years
3 to come.

4 In closing, thank you again to the committee for its
5 partnership and for its tireless dedication to the
6 Department and our servicemembers. I look forward to
7 answering your questions.

8 [The prepared statement of Mr. Hill follows:]

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Senator King: Mr. Calvelli. Secretary Calvelli.

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1 STATEMENT OF THE HONORABLE FRANK CALVELLI, ASSISTANT
2 SECRETARY OF THE AIR FORCE FOR SPACE ACQUISITION AND
3 INTEGRATION

4 Mr. Calvelli: Chairman King, Ranking Member Fischer,
5 and distinguished members of the subcommittee, thank you for
6 inviting me to testify before you today.

7 With the growing threats in space we must continue to
8 transform our space architecture to be more proliferated and
9 more resilient so that it can always be counted on during
10 times of peace, crisis, or conflict. As the Service
11 Acquisition Executive for Space, I am focused on two things:
12 driving speed in our acquisitions and delivering programs on
13 cost and schedule. I would like to highlight some of the
14 progress we have made since I testified before this
15 committee last year.

16 Since the spring of 2023, the Space Development Agency
17 has delivered 27 satellites to orbit, nearly all of them in
18 around 3 years from contract award. This includes 8 new
19 missile warning/missile tracking satellites and 19 data
20 transport satellites. With these systems, we have been able
21 to demonstrate the first-ever Link 16 network connection
22 from space, a capability that will allow warfighters to
23 extend beyond-line-of-sight messages.

24 The Space Rapid Capabilities Office completed and is in
25 the process of fielding the first 11 of 24 low-cost,

1 transportable, terrestrial satellite communications jammers.
2 These jammers went from contact award to fielding in about
3 18 months. Additionally, last June, Space RCO completed an
4 on-orbit testing of its enhanced threat awareness payloads,
5 and delivering those payloads to the Space Force programs to
6 use.

7 Meanwhile, the Space Systems Command continues to make
8 outstanding progress towards modernizing both our missile
9 warning and military satellite communications architectures
10 to be more resilient. Space Systems Command launched the
11 first Weather System Follow-on Microwave satellite last
12 month to support the pivot to a more resilient,
13 disaggregated, hybrid weather architecture to meet
14 warfighter requirements.

15 Last September, Space Systems Command's Tactically
16 Responsive Space mission, known as VICTUS NOX, demonstrating
17 the ability to go from factory floor to on-orbit operations
18 in less than 5 days.

19 And since April of 2023, there have been 7 national
20 security space launches that delivered critical warfighting
21 capabilities to orbit.

22 SSC is also adding resilience through allied
23 partnerships. For example, they delivered two enhanced
24 polar system payloads, which will be hosted on Space Norway
25 satellites that will be dual-launched this July, providing

1 protective satellite communications in the Arctic region.
2 Space Systems Command even broke ground this summer, in
3 Australia, or last summer, on the Deep Space Advanced Radar
4 Capability Site 1, and will award design contract for Site 2
5 this summer with the United Kingdom. This partnership with
6 Australia and the U.K. is critical to our space demand
7 awareness mission.

8 We are also continuing to take advantage of strong
9 space industrial base, including awarding contracts to many
10 nontraditional space companies and implementing our recently
11 published Commercial Space Strategy.

12 Simultaneously, we are aggressively tackling
13 challenging programs to get them over the finish line. We
14 are focused on delivering the GPS Next-Gen Operational
15 Control Segment, also known as OCX, and making significant
16 progress towards getting the system ready to transition to
17 operations in 2025.

18 Another one of our challenging programs, ATLAS, has
19 made significant progress. The program is on schedule to
20 incrementally deliver space demand awareness command and
21 control capabilities next year to enable finally the
22 decommissioning of the legacy SPADOC system.

23 We have also proven now that we can build small
24 satellites quickly. However, as we begin to deliver the
25 next tranche of SDA satellites this fall, getting the

1 military services to adopt and use these satellites will be
2 a key success to our systems. Likewise, our ability to
3 maintain a short access to space for our space capabilities
4 remains paramount, and launch providers must be ready to
5 scale to meet the increased demand.

6 We are also working to move programs out of Special
7 Access Program stovepipes, thanks to DoD's Space
8 Classification Policy update this past December. This will
9 improve our ability to integrate spaces for other domains
10 and enable better sharing with our allies.

11 Overall, we are doing a lot by simultaneously
12 transforming our space architecture to make it more
13 resilient, and at the same time investing in those protect-
14 and-defend missions that we need to do to guarantee the
15 advantage we get from space and protect the Joint Forces.

16 As we continue to drive speed into our acquisitions,
17 our job and our top priority as acquisition professionals is
18 centered around program execution. Simply defined, it means
19 delivering programs on cost, on schedule, that work. We are
20 taking a special interest in making sure that up front, when
21 we develop our action strategies and RFP documents, or
22 request for proposal documents, that they are realistic and
23 executable, that we implement source selection strategies
24 that lead us to awarding contracts with achievable cost and
25 schedule baselines, and to a contractor with the right

1 expertise, skills, and staff to do the job, and then once
2 under contract, relentlessly managing the program based on
3 the daily basis to ensure we deliver on cost and on
4 schedule. Given the threats and increased capabilities of
5 our competitors, it is critical that we deliver programs on
6 cost and schedule, and this is a key focus area for me.

7 Thank you to the subcommittee for all your support. I
8 look forward to your questions.

9 [The prepared statement of Mr. Calvelli follows:]

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Senator King: General Guetlein.

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1 STATEMENT OF GENERAL MICHAEL A. GUETLEIN, USSF, VICE
2 CHIEF OF SPACE OPERATIONS

3 General Guetlein: Chairman King, Ranking Member
4 Fischer, and distinguished members of the subcommittee,
5 thank you for your continued support and for the opportunity
6 to testify on the Space Force's posture for fiscal year
7 2025.

8 On behalf of the Secretary of the Air Force, the
9 Honorable Frank Kendall, and the Chief of Space Operations,
10 General B. Chance Saltzman, I am honored to share that we
11 are wholly dedicated to forging a new service, purpose built
12 for great power competition. Space has never been more
13 critical to the security of our nation, and the success or
14 failure of the Joint Force depends heavily on the
15 capabilities that we present.

16 Repeated actions by both the Russian Federation and the
17 People's Republic of China underscore the urgency for
18 action. Although we still may control the space over our
19 competitors, they are working hard to close the gap and
20 assert their dominance in space. We cannot afford to let
21 this happen.

22 Space is the foundation for the Joint Force, and it is
23 fundamental to our peaceful way of life. GPS alone is an
24 essential part of every aspect of our daily lives, from our
25 cellphones to our banking systems, and even to our ability

1 to get crops out of the field and groceries to the shelves.
2 We cannot let our near peer competitors overtake us or we
3 will lose what we hold dear. If we fail to keep pace and
4 ultimately surrender our lead in space, every space-enabled
5 benefit we enjoy today will be at risk, and the world will
6 become a far more dangerous place.

7 We must maintain control of the domain in order to
8 defend the United States and to protect the Joint Force from
9 space-enabled attack. With only 3 percent of the DoD's
10 budget, the Space Force offers a tremendous value
11 proposition to the nation. Every dollar invested in space
12 brings asymmetric returns. But that also means that every
13 dollar cut creates asymmetric risk.

14 Make no mistake. If we are to deter, and if necessary,
15 defeat aggression in space and across the globe, we must
16 continue to invest in the United States Space Force.

17 Against a near peer adversary, control of space is the
18 linchpin. Without it we cannot deter conflict, without it
19 we cannot provide vital effects, without it we cannot
20 protect the Joint Force, and without it, we cannot win.

21 The Space Force's theory of success includes three
22 parts: avoid operational surprise, deny first mover
23 advantage, and conduct responsible operations in space. The
24 Space Force's budget request aligns with these priorities
25 and is designed to support the National Defense Strategy by

1 building training and equipping the forces the nation needs
2 to preserve freedom of action in space while deterring and
3 denying adversarial objectives.

4 Avoiding operational surprise requires us to maintain
5 an accurate understanding of the space domain at all times.

6 8.3 percent of our budget is dedicated to the same.

7 Operating across disaggregated sensor frameworks, the Space
8 Force provides the maximum information possible to decision-
9 makers from the tactical to the strategic level.

10 Denying first mover advantage demands that we make an
11 unwarranted attack against the United States impractical and
12 self-defeating. 43.4 percent of our budget is devoted to
13 this objective, investing in resiliency from missile warning
14 and tracking, satellite communications, and position
15 navigation and timing.

16 Finally, responsible operations in space describes a
17 mechanism by which the Space Force contests and controls the
18 space domain. 24.7 percent of the fiscal year 2025 Space
19 Force budget is dedicated to this effort. Within the
20 constraints of the Fiscal Responsibility Act, the fiscal
21 year 2025 Space Force budget reflects hard choices, and as a
22 result, slows the pace of transformation and modernization.
23 Addressing these challenges depends on Guardians that are
24 trained and ready to meet the high-tech demands of space
25 operations. For that reason I would like to personally

1 thank this committee for its support of the Space Force
2 Personnel Management Act. This will be a major force
3 multiplier in the Space Force's efforts to modernize the way
4 we recruit, build, and retain talent.

5 Thank you for the opportunity to discuss the Space
6 Force's fiscal year 2025 budget and posture. In the face of
7 accelerating threats, the Guardians have clearly
8 demonstrated the capability, the resolve, and the expertise
9 necessary to face the challenges posed by our near peer
10 competitors, but there is more to do. The support of this
11 committee enables our Guardians to continue to preserve and
12 expand our strategic advantage and outperform any pacing
13 challenge.

14 I look forward to working with you as we defeat
15 tomorrow's challenges together, and I look forward to your
16 questions.

17 [The prepared statement of General Guetlein follows:]

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1 Senator King: Thank you all three. That was excellent
2 testimony, and I appreciate it.

3 First I want to make a confession. I noticed my
4 colleague, Senator Cramer, is in the room. When the Space
5 Force was first proposed, I was a skeptic. I ultimately
6 supported it, but I just was not sure that this was a
7 direction we needed to move in.

8 I am now a convert. I think the Space Force is
9 absolutely in the right place at the right time, taking the
10 right actions, and I am glad that we have an organization
11 that is dedicated strictly to that mission. I do not know
12 how often you hear Senators admit mistakes, but I wanted to
13 get that on the record.

14 The other thing I had to note, somewhat humorously,
15 several years ago I visited Pine Gap in Australia with
16 members of the Intelligence Committee, which of course is
17 one of the world's major ground stations for space assets.
18 And we were with the Intelligence Committee. I was sure
19 that this was highly classified. I came home, did not talk
20 about it to anyone. They did not even tell them where I
21 went until I noticed there was a Netflix series called "Pine
22 Gap," which was set at Pine Gap. So I guess it was not all
23 that classified.

24 Mr. Hill, classification. Are you making any progress
25 on the declassification? Having information that cannot be

1 used by the people that need it is not very useful
2 information. Talk to me about where you are in the
3 declassification process.

4 Mr. Hill: Thank you, Chairman King. Yes, we are
5 making progress. With the Deputy Secretary having signed
6 out the new policy, that took us a good year to rewrite the
7 policy. It was replacing a policy that was 20 years old.
8 That policy was clearly out of date. It provides an updated
9 framework for the program developers and operators to
10 understand what is the minimum classification, if any
11 classification, is necessary for a particular type of
12 activity or program.

13 We then turned that over to the services, and Secretary
14 Calvelli is taking it very actively to them, rewrite the
15 classification guides that they own for the particular
16 systems that they develop. One important thing to
17 understand --

18 Senator King: Human nature is to overclassify.

19 Mr. Hill: Yeah.

20 Senator King: Is there some systematic way to say does
21 this really need to be classified at this level? Is there a
22 mechanism?

23 Mr. Hill: Yeah, that policy very clearly provides
24 that, and the direction Space Force and Secretary Calvelli
25 have taken to heart is to move as fast as they can to update

1 to that policy, which I expect will result in many things
2 being removed from Special Access Programs. That will
3 enable better planning and integration across the Joint
4 Force.

5 So what I could offer is maybe Secretary Calvelli could
6 talk specifically --

7 Senator King: Secretary Calvelli, your views?

8 Mr. Calvelli: Yeah. So there was a 2004 policy that
9 threw most space activities into the SAP world. I mean, it
10 was actually a written policy. Thanks to John, and before
11 him John Plumb, they actually got that policy updated for
12 the first time in 20 years this past December. So now that
13 frees us the ability to actually take programs out of
14 Special Access channels. Because Special Access channels,
15 all they do is cause stovepipes.

16 So now we actively have a team in place that has put
17 together a plan, a strategy. Instead of doing it program by
18 program, we are doing it all at once. So we are doing one
19 entire strategy up front. We will have it in place this
20 fall to actually remove the vast majority of all of our
21 space programs and reclassify them into TS, Top Secret, and
22 Secret. They will not become unclassified but they will
23 become Secret and TS, which will allow a lot more sharing as
24 well as the ability to get rid of all those stovepipes.

25 Senator King: Thank you. I appreciate that and hope

1 that project will continue.

2 A big question and not much time left. Commercial
3 integration. All of you talked about resiliency. One of
4 the keys to resiliency is proliferation -- lots of smaller
5 satellites, fewer single targets. What have we learned from
6 Ukraine about the use of commercial satellites, particularly
7 Starlink? Has the theory of proliferation worked?

8 Mr. Hill: I think we are seeing that the innovation
9 that came out of the commercial sector, which we are also
10 adopting in many of the DoD architectures, that
11 proliferation is absolutely one of the key elements of a
12 resiliency strategy that supports mission assurance.
13 Ukraine is proof of that.

14 Senator King: Thank you. Thank you all very much.
15 Senator Fischer.

16 Senator Fischer: Thank you, Mr. Chairman. I would
17 like to follow up on the commercial side a little bit and
18 how that ties in. First of all, thank you to the Department
19 for issuing some good strategy in driving that forward with
20 some goals and requirements and focus. Mr. Calvelli and
21 General Guetlein, especially, I believe you both need to be
22 thanked for this. We continue to need to harness that.

23 Mr. Secretary, one of those hard problems is achieving
24 space domain awareness and finding and characterizing our
25 adversaries' activities in space. Can you speak to

1 commercial capabilities that exist today in this area, both
2 in tracking algorithms and in capturing commercial imagery
3 of objects in space as well as any work you are doing in the
4 private sector with this mission.

5 Mr. Calvelli: Yes. So space domain awareness, as you
6 know, is probably key to any kind of activity we would ever
7 counter in space, understanding what is in the domain and
8 keeping track of it. It is high on our list and I know it
9 is high on General Whiting's list, as well.

10 We are taking advantage of commercial where we can.
11 There are some amazing companies out there that actually
12 have ground-based telescopes today as well as other
13 commercial data that they are able to give and that we
14 purchased through multiple avenues, to use that.

15 We are also updating several of our radar sites,
16 actually building new radar sites. A program called Deep
17 Advanced Space Radar, or DARC, is actually a new set of
18 radars we are putting in three locations -- Australia, in
19 the Outback; Texas; and then United Kingdom -- and that is
20 going to give us space domain awareness capabilities to
21 track really small objects in geosynchronous orbit.

22 We are also upgrading some of our internal Space Force
23 antennas that we have, or telescopes, to do space-based
24 tracking. But a combination of upgrades that we are making
25 on our systems as well as continuing purchasing of

1 commercial, and as more and more commercial companies start
2 to take on space domain awareness mission, taking advantage
3 of that, I think over time we will grow the capabilities
4 that we need for space domain awareness.

5 Senator Fischer: Do you need any more authorities or
6 funding to make sure that this is going to happen, or are we
7 on the right track now, do you think?

8 Mr. Calvelli: Never say no to funding.

9 [Laughter.]

10 Mr. Calvelli: But I think we are making progress
11 against our plan right now. I mean, we could always
12 accelerate things with additional dollars.

13 Senator Fischer: What about authorities?

14 Mr. Calvelli: For buying space domain awareness data?
15 I do not see any show-stoppers with authorities. I do not
16 know of General Guetlein would like to comment.

17 General Guetlein: Ma'am, we are not challenged by
18 authorities. We are challenged by resources. We have the
19 Joint Commercial Office today that is a partnership with
20 industry and 15 of our allied partners. We have locations
21 in Shriever here in the United States. We have locations in
22 Australia and locations in Europe, where we are buying space
23 domain awareness data from all the providers and then
24 sharing it openly between all members. That did not require
25 any additional authorities, but we are spending on orders of

1 about \$25 million a year to buy that data and distribute
2 that data.

3 Senator Fischer: That brings me to my second point
4 about the budget request. We have seen, throughout the
5 first 4 years, a lot of ramping up for Space Force, the
6 budget increased, and that is not the case this year.
7 General, we are looking at flat budget growth, which really
8 amounts to a cut when we consider inflation into this, and
9 it does limit Space Force's ability to meet the current
10 threats that we face. You alluded to that. Would you like
11 to expound on that a little bit more?

12 General Guetlein: Yes, ma'am. I would put it into
13 context with two things. One, right now there is a
14 capability gap between us and our near peer competitors.
15 That capability gap is rapidly narrowing. Given the
16 resources we have today, we had to make some very tough
17 decisions between balancing today's readiness and investing
18 in tomorrow. And then balancing also within the Fiscal
19 Responsibility Act. That really constrained what we were
20 able to invest in the future. If we are able to either
21 maintain that capability gap that we currently enjoy today
22 or to widen that capability gap, we are going to have to
23 expand the amount of resources that we are spending in
24 space.

25 Senator Fischer: How can we make that point clear?

1 Senator King and I speak often about looking at
2 classification of information that is out there so that,
3 first of all, many of our colleagues, I think, would pay
4 more attention to that if their constituents or the media is
5 paying attention to what would be declassified and the
6 information put out. So how do we get it to the public?

7 General Guetlein: Ma'am, we have got to talk about, if
8 you look at that Space Force was stood up in 2019, prior to
9 2019, we did not talk about this. It was too highly
10 classified, we did not share data with our allies, et
11 cetera. Since 2019, we have changed that dialogue. We have
12 a long way to catch up, though, in this information
13 environment, of educating both the public as well as our
14 members on the Hill of what the challenges in space are.

15 But more importantly the dependencies that we have as a
16 nation, as a free society on space, outside of the military,
17 on a day-to-day basis, are immense, and we have got to get
18 that message across.

19 Senator Fischer: Thank you. Thank you, Mr. Chairman.

20 Senator King: I have often thought of the Fiscal
21 Responsibility Act as a straitjacket we put on ourselves,
22 and now we are dealing with the consequences, not only in
23 your budget but across the board.

24 Senator Cramer, the godfather of the Space Force.

25 Senator Cramer: Thanks, and your confession was very

1 heartwarming. I bet it was really good for your soul.
2 Anyway, that said, thank you, gentlemen -- and frankly,
3 thank you for your candor too. I think this is really
4 important.

5 I want to start with the disruptor side of things.
6 Secretary Calvelli, you referenced nontraditional partners.
7 Space is so interesting because the Air Force has these
8 wonderful prime contractors that respond to whatever they
9 are asked of. Space, it seems to me, seems be responding to
10 the private sector itself, the commercial side, which has
11 been so active, and that is good.

12 I remember one of my very first discussions with
13 General Raymond was, "You have a white sheet of paper.
14 Please utilize the freedom that provides and don't adapt to
15 the culture that you are coming from." So whether it is a
16 disruptor in the private sector, and you talked about fixed
17 price as a contributor to competition, when I think of the
18 Space Development Agency I always think of SDA as the
19 disruptor within the service itself. And I am sure that
20 creates a lot of tensions, and I recall several
21 conversations in the last few years, particularly the early
22 couple of years.

23 So with the spiral development concept that you all use
24 and that SDA uses, help me understand the role of SDA as the
25 acquisition part of the shop, and then their role in

1 providing, whether it is maintenance or management,
2 participating, or do you just go to them and say, "We need
3 100 more of these things. Buy them"?

4 And I ask that question, honestly, with some concern
5 that SDA could end up getting a little bit handcuffed and
6 not be the disruptor we need them to be within the larger
7 Space Force, if that makes sense. And you can elaborate and
8 correct me where I am wrong.

9 Mr. Calvelli: No, I think you are right.

10 Senator Cramer: Thank you.

11 Mr. Calvelli: So SDA has been doing a magnificent job
12 in terms of getting capabilities to orbit. So their first
13 spiral, what they call Tranche 0, got 27 satellites in
14 orbit, 8 missile warning/missile tracking satellites, and 19
15 transport satellites, and we are demonstrating those
16 capabilities now.

17 Tranche 1 will start launching again. December will be
18 the first set of launches for there, again more transport
19 satellites, and then next spring more tracking satellites.

20 So from where they fit in, all things proliferated at
21 low-earth orbit that relate to missile warning, missile
22 tracking, as well as data transport, SDA is our go-to. That
23 is their strength. Their strength is small sats
24 proliferation, low-earth orbit, hundreds of miles above the
25 earth.

1 We tend to go to Space Systems Command for the more
2 traditional missions, such as military satellite
3 communications at higher altitudes, higher altitudes for
4 missile warning for launch, for space domain awareness. And
5 then we tend to go to Space RCO for things that are related
6 to, I will say, protect and defend kind of missions that are
7 unique, that would go directly to support Space Command.

8 But overall it is working out pretty good. SDA is part
9 of the Space Force. They are part of the family. They fit
10 in. Even though they are a little bit disruptive, they fit
11 in pretty nicely, actually. I think they are showing the
12 way to the other parts of the organization that, by building
13 smaller and by using fixed price you actually can go faster.
14 I am really impressed with them bringing in new space
15 companies like Sea Air Space and Rocket Lab and York
16 Systems, and using commercial bus lines, like we see at
17 Airbus and at Terran Orbital. And I think those are all
18 really healthy things for the country.

19 So under my watch I expect to continue to see SDA keep
20 doing their great work. And I think the biggest thing we
21 will see down the road is we need to make sure, as we launch
22 Tranche 1, which is operational systems next year --

23 Senator Cramer: Yes.

24 Mr. Calvelli: -- that people use it. It does not
25 matter how fast we build them if no one uses them, and we

1 need to get the services to ramp on it and adopt it.

2 Senator Cramer: General, just elaborating a little bit
3 on that, then is there a handoff, or does SDA continue to
4 sort of operate in that space after the assets are launched?
5 As the Secretary said, if no one uses them, but if no one is
6 using them, does SDA continue -- so do using them and
7 helping develop new and spiral as they operating what they
8 have done already?

9 General Guetlein: Yes, Senator. So as Secretary
10 Calvelli said, we have integrated Space Development Agency
11 fully into the United States Space Force --

12 Senator Cramer: I understand that.

13 General Guetlein: -- so they are a part of the team.
14 Their capabilities are being detail planned into our
15 wargames, our exercises going forward, and into our war
16 plans. So we are already counting on that capability and
17 starting to test it. Like Secretary Calvelli said, we
18 already proved Link 16 from space. We are now taking that
19 capability and playing it into the exercises to see how it
20 plays, understanding how it is going to support in a
21 contested environment, and how do we continue to take
22 advantage of it.

23 Senator Cramer: Thank you. And if there is another
24 round I may get into some of the budget stuff. Thank you.

25 Senator King: Senator Tuberville.

1 Senator Tuberville: We recently had a discussion with
2 General Saltzman about refueling, and he wanted \$20 million,
3 I think, in the 2025 budget. How far are we behind China in
4 refueling? This \$20 million was only for a study. Can you
5 explain that? I mean, \$20 million for a study, other than
6 \$20 million more for learning how to refuel, and why we need
7 to refuel, and how far behind we are. Anybody want to
8 answer.

9 General Guetlein: Yes, Senator, that is a good
10 question, and I do recall you asking the CSO about that
11 question. Right now we are doing the exploration of
12 refueling in space to understand what does it actually
13 contribute to the fight, because there is a balance between
14 building refueling capability into a satellite, which is
15 semi-expensive, and buying proliferated, lower-cost
16 constellations. So we are going to need a combination of
17 both. We are not sure what orbits are going to be which.
18 We are not sure how we are going to do refueling as a
19 service yet. So the \$20 million is to actually study those
20 effects.

21 Senator Tuberville: Anybody else?

22 Mr. Calvelli: And some of that fund actually goes to
23 some demonstrations, as well, not on space but on the ground
24 side, actually, looking at what it takes to go build the
25 refueling unit and some demonstrations that we are doing on

1 the ground side in terms of just the concept of two space
2 vehicles docking and being able to actually put a refueling
3 module in and how the refueling works.

4 So some of the money is going to study work to see
5 where the bigger picture is, and other some of that money is
6 also going to actually design work and demonstration work.

7 Senator Tuberville: Going back to commercial
8 capabilities, are we leveraging those the right way,
9 General?

10 General Guetlein: Yes, Senator, we are. Secretary
11 Hill just talked about publishing of the DoD's Commercial
12 Space Strategy. On the heels of that we published the Space
13 Force Commercial Space Strategy, which is all about how do I
14 take advantage of space to start filling in resiliency,
15 capacity, and redundancy into our capabilities.

16 What we do know today is I cannot build all the kit
17 that I am going to need. We are going to rely on
18 partnerships, partnerships with allies and partnerships with
19 our industrial partners. If you go back to the history of
20 the United States, we have always relied on our industrial
21 base during times of crisis or conflict, and this is going
22 to be no different.

23 So we are currently designing in how to take maximal
24 advantage of those capabilities and innovation that is
25 coming out of commercial to build out what we call hybrid

1 architectures, which are a combination of DoD, civil,
2 allied, and commercial platforms altogether, to get us to
3 that capacity and that resiliency that we need in the
4 future.

5 Senator Tuberville: There is not a week goes by that I
6 do not have somebody coming from Huntsville that is building
7 new satellites. I mean, it seems like it is a growing
8 trend. And whether it is building or refueling or using
9 nuclear energy in satellites or offensive and defensive
10 satellite.

11 Do you all see the same thing? I mean, are you all
12 overwhelmed with people that are getting in the satellite
13 business, Secretary?

14 Mr. Calvelli: Yeah, it is amazing. We are very
15 fortunate -- knock on wood, and I hope it keeps up -- the
16 space economy is starting to boom, and we are seeing amazing
17 entrepreneurship from across the United States and companies
18 come in.

19 A week does not go by that a new company does not come
20 in and tell me about some great concept that they are
21 pursuing and doing. And what is really wonderful is that
22 they are also getting great investment dollars, as well, to
23 be able to start themselves off. So we are excited about
24 the new space economy that is booming.

25 Senator Tuberville: Seems like they have got a lot of

1 money they want to invest, which is fine with us, right?

2 Mr. Calvelli: Yes, absolutely.

3 Senator Tuberville: It helps us all.

4 General, what about recruiting and retention in the
5 Space Force? Could you talk a little bit about that?

6 General Guetlein: Thank you, Senator. We have the
7 highest recruiting and retention in the United States Space
8 Force today. We continuously exceeded our recruiting goals
9 by several hundred. We have more people beating on our door
10 to come into the Space Force than we can possibly take
11 efficiently today, so that is a great problem.

12 From the retention side of the question we are also
13 doing great. We are in the high 90s on both enlisted and
14 civilians, and we are able to retain that technical talent
15 that we need for a complicated domain.

16 Senator Tuberville: It seems like that would be one of
17 your most important things is retention, experience. A lot
18 of money out there in the private sector, as we just talked
19 about, building satellites. So you do not see any problem
20 in retention? We have not had that problem?

21 General Guetlein: No, sir. We have not had that
22 retention today in the United States Space Force. We are
23 constantly watching for it. We are constantly trying to
24 make sure that we are giving our Guardians an experience and
25 that we are giving them the tools that they need to be

1 successful. But like I said, right now we are in the high
2 90s for both our enlisted and our officers for retention.

3 Senator Tuberville: Thank you. Thank you, Mr.
4 Chairman.

5 Senator King: Senator Rounds.

6 Senator Rounds: Thank you, Mr. Chairman. First, let
7 me just say thanks to all of you for your service to our
8 country. We appreciate the opportunity to have this open
9 briefing.

10 I want to focus on just a couple of items that I think
11 we sometimes miss in the discussion when we are in a
12 classified session, and part of it is the budget itself. On
13 May 1st of this year, in front of the SASC hearing on the
14 Space Force posture, it was reported that we have got
15 basically a decrease in the Space Force budget for 2025 from
16 2024. The request in the fiscal year 2025 is \$29.4 billion,
17 which is a decrease of \$600 million from fiscal year 2024 --
18 \$18.7 million for research, development, and testing, and
19 the fiscal year 2024 request was \$19.2 billion, the enacted
20 was \$18.6. That is almost \$600 million less.

21 We are talking an additional \$650 million less with
22 regard to procurement, and we are talking \$122 million less
23 with regard to operations and maintenance, and we are
24 looking at about \$9 million, almost \$10 million less with
25 regard to military personnel.

1 Look, that does not bode well for the fact that out of
2 the five domains we have got -- air, land, sea, space, and
3 cyberspace -- to walk in and suggest that while China and
4 Russia are both expanding their operations in space it would
5 appear from the budget numbers themselves that we are
6 suggesting a decrease in our operational capacity.

7 Mr. Hill, your thoughts.

8 Mr. Hill: Senator Rounds, that hits the nail on the
9 head of a problem we face this year. We have all mentioned
10 it. I mentioned it. I think the Chairman or the Ranking
11 Member mentioned the constraints of the Fiscal
12 Responsibility Act, one. That was one of the factors we had
13 to deal with this year. Two is something that General
14 Guetlein spoke to, the different nature of the Space Force
15 budget. So when you get through putting together all the
16 must-pay bills, and the Department of Defense has must-pay
17 bills of salary and support to families, and operations, and
18 so forth, of the forces, and you get down to what is left of
19 discretionary, you come down to areas like readiness,
20 research, development, testing, and evaluation --

21 Senator Rounds: We are cutting it, are we not?

22 Mr. Hill: -- and procurement. And so where are you
23 going to make those cuts? The cuts focused more, maintain
24 the readiness, sacrifice some of the future, and those
25 investment accounts are very -- the Space Force has a high

1 concentration of them.

2 Senator Rounds: Let me go on. General Guetlein, I
3 think you wear and uniform, and it is always your
4 professional opinion that we are looking for, and that is
5 how much do you need in order to do your job. And right now
6 I am looking at this saying we are reducing what you have
7 and expecting you to get the job done. The bottom line is
8 we are expecting more out of Space Force in the next couple
9 of years than we have ever expected in the past, as we
10 remove some of our air-based capabilities, ISRs
11 specifically. What is the number that is appropriate as
12 opposed to what we are seeing in the proposed budget?

13 General Guetlein: Senator, I cannot give you a number.
14 I can tell you that the threat is increasing daily. They
15 are intent on not only denying our ability to use space,
16 they are actually proving extremely capable at denying our
17 ability to use space. And they are trying to narrow that
18 gap of capability down to zero or even negative, and we have
19 got to increase that gap.

20 Senator Rounds: General, if we were in a classified
21 session and we asked you which programs, which products,
22 which plans you proposed were denied in this budget, would
23 you be able to give us a straight answer at that time?

24 General Guetlein: Yes, sir.

25 Senator Rounds: Thank you. Look, and let me go on a

1 little bit. Right now we have got guys in the Gulf sitting
2 on destroyers and other equipment that we have got that are
3 in harm's way. Part of what we expect is to be able to
4 provide them with accurate information, intel, ISR, to be
5 able to identify the guys that are shooting at them, the
6 Houthis. Today in the Gulf we have reduced numbers of those
7 types of assets available, and yet we have got guys still
8 sitting there. Now, they are knocking off the actual
9 weapons that are being shot at them, but I think it is about
10 time that we start using the assets that we have got to find
11 the guys that are making the decisions on when to shoot them
12 and take them out before they are attacking our people.

13 The ISR that we have got right now is air-based and
14 space-based. Are we in a position to provide the type of
15 ISR necessary today in space to actually provide these folks
16 with real-time information about who the bad guys are and
17 where they are at and how we get at them?

18 General Guetlein: Yes, Senator, we can provide that
19 information from space, and we do it every single day. But
20 as this threat continues to mature we are going to need
21 additional ISR capabilities, both in air as well as in
22 space.

23 Senator Rounds: Thank you. I think that is a very
24 straightforward answer. We need both, do we not?

25 General Guetlein: Correct.

1 Senator Rounds: In the air-based and space-based.

2 General Guetlein: Yes, sir.

3 Senator Rounds: And right now we are short on both.

4 General Guetlein: And the closer in that we get to the
5 actual threat itself, we need to start going more towards
6 space to become resilient and to get around the anti-
7 access/aerial denial capabilities of our adversaries. But
8 the standoff capability very much needs to be airborne and
9 into other types of conflict also needs to be airborne.

10 Senator Rounds: Thank you. Thank you, Mr. Chairman.

11 Senator King: Senator Warren.

12 Senator Warren: Thank you, Mr. Chairman. When Russia
13 invaded Ukraine it destroyed Ukraine's internet and its
14 telephone access, and to help get Ukraine back online,
15 SpaceX, one of our defense contractors, donated satellite
16 internal terminals, called Starlink, and this allowed
17 Ukrainian soldiers to run apps to target Russian forces and
18 to be able to communicate with loved ones back home.

19 Earlier this month, I wrote to DoD about Russia's use
20 of Starlink terminals. Reports indicate that Russia has
21 been able to buy Starlink terminals on the black market and
22 that SpaceX has not cut off their access, and that provides
23 a major advantage to Russia on the battlefield.

24 Now SpaceX is owned by Elon Musk, who has advocated
25 for, quote, "a peace plan," close quote, that reports

1 suggest may have been developed after speaking with Vladimir
2 Putin.

3 Congress has a constitutional responsibility to make
4 sure that taxpayer money does not go to companies that
5 undermine U.S. national security goals. So I think it is
6 critical that we get to the bottom of this.

7 Mr. Hill, you oversee our space and missile defense and
8 you have been working with SpaceX to counter illicit use of
9 Starlink terminals. Let me start by asking, was SpaceX
10 completely cooperative with DoD in its efforts to address
11 the use of Starlink terminals by Russian forces?

12 Mr. Hill: Senator, not only has SpaceX been very
13 cooperative with the entire United States government and the
14 government of Ukraine, they have been forward leaning in
15 identifying and bringing information to us.

16 Senator Warren: Okay. Good. Good. I am glad to hear
17 it because it is obviously critical that DoD contractors are
18 not undermine U.S. foreign policy.

19 So Russia's outdated communications have been a major
20 contributor to their failures in Ukraine. Starlink
21 obviously would be enormously valuable to the Russians. It
22 would provide Russia with secure communications that they
23 sorely need, which would significantly erode Ukraine's
24 advantage on the battlefield. And I understand this is an
25 unclassified environment so I do not want to go anywhere

1 where we should not. But I think there is a compelling
2 public interest to conduct this oversight and to understand
3 how DoD is plugging leaks here.

4 Mr. Hill, in the broadest terms, can you describe how
5 you worked with SpaceX to address this illicit use?

6 Mr. Hill: So in broadest terms, recognizing that
7 Russia has long-standing experience operating black markets
8 --

9 Senator Warren: Yes.

10 Mr. Hill: -- and is now leveraging black markets on
11 their own. We have, one point, the Commercial Integration
12 Cell. This is a cell that combines Space Operations Center
13 where commercial companies and the U.S. government can work
14 together and can share information, including company
15 proprietary information and classified information. That is
16 one point where we can learn what is going on. They can
17 share with us what they are seeing, and we can share what we
18 are seeing.

19 Broader across the government, we can then develop
20 strategies. Is it better to identify all the terminals
21 which should be left on, or should we identify terminals
22 that should be turned off? Different types of approach to
23 list. We have done that with them.

24 Senator Warren: Okay. So let me ask this maybe a
25 little more pointedly. Do you have confidence that moving

1 forward DoD can identify illicit Russian use of Starlink
2 services and completely shut them off?

3 Mr. Hill: I think this will be a continuous problem.

4 Senator Warren: I take that as a no.

5 Mr. Hill: I think we can continue to identify them and
6 turn them off, but I think Russia will not stop at --

7 Senator Warren: Okay. So you think it is going to be
8 an ongoing process.

9 You know, war obviously is an unpredictable unfolding,
10 but we should not have to worry about whether or not U.S.
11 contractors are supporting our adversaries or giving access
12 to our adversaries. And my understanding is that Space
13 Force is negotiating an extension of its Starlink contract
14 with SpaceX.

15 So Mr. Hill, can you assure me that as you renegotiate
16 this contract that you will have provisions in place that
17 will require SpaceX to do everything within its ability to
18 prevent illicit use by Russia and other forces?

19 Mr. Hill: Our contracts, in conjunction with the
20 licenses that regulatory agencies provide -- DoD does not
21 control those -- together they ensure what you are looking
22 for, in terms of if SpaceX complies with our contracts and
23 they comply with the licenses that they have from regulatory
24 agencies, who can enforce those licenses, and the various
25 civil and criminal --

1 Senator Warren: Okay. I just want to make sure I am
2 understanding it, and I get it, we are in an unclassified
3 setting here. The devil is always in the details. I taught
4 contract law for many years. So I would ask you to submit
5 to the committee the conditions that give you confidence
6 that SpaceX is bound contractually so that it will prevent
7 illicit use of those terminals by Russia.

8 You know, I just think it is critically important that
9 DoD hold its contractors accountable for any mismanagement
10 or any illegal acquisition of its hardware and services by
11 bad actors, and we just want to make sure that Russia is not
12 getting an advantage here.

13 Mr. Hill: In responding to the letter that you
14 mentioned at the outset, we will be addressing those kinds
15 of things for you.

16 Senator Warren: I appreciate it. Thank you. Thank
17 you, Mr. Chairman.

18 Senator King: [Inaudible.]

19 Senator Rosen: -- Senator Cramer was next. Thank you.
20 Well, thank you, Mr. Chairman. Thank you all for being
21 here, for the work that you do. Really appreciate it.

22 I am just going to right into it and talk about Iran,
23 Russia, and we are going to stay on this topic a little bit
24 about Russia, but now Iran, Russia, and their space
25 collaboration, because they are both driven by a shared

1 interest in countering U.S. superiority in space, Iran and
2 Russia. They are deepening their cooperation in space. And
3 we know, just this past February, Russia launched an Iranian
4 satellite into orbit, and the two countries have signed an
5 agreement for their space industries to cooperate. Iran's
6 10-year space program relies on Russian assistance for its
7 operations, from launching their high payload satellites to
8 the ultimate goal of sending an Iranian into space.

9 So Mr. Hill, what are the security, and I am not sure
10 if you can speak to the threat implications, but maybe the
11 general can, knowing that we are in an open session, of the
12 joint Iranian-Russian space cooperation, and how is the U.S.
13 addressing and navigating this emerging state partnership
14 that I think we might be worried about.

15 Mr. Hill: I would add it does not stop at Iran. It
16 also involves North Korea, as we have seen with Iran and
17 North Korea providing Russia missile to support Russia's
18 operations in Ukraine, and then Russia likely providing them
19 technology assistance in their programs to expand the
20 threats that they present to us and to others.

21 The responses of controlling transfers of technology
22 have their limitations. We certainly are watching what they
23 are doing, but the ability to continue cutting off Russia
24 and Iran and North Korea is fundamentally at the crux of it,
25 but they are going to keep pressing on those.

1 Senator Rosen: We probably need a closed session to
2 talk about what this really entails. If you can speak to it
3 at all. Otherwise we will wait for the closed session.

4 General Guetlein: Senator, I cannot go into the
5 specific details. I can tell you it is troubling. We are
6 seeing proliferation of technology. We are seeing support
7 of launch technology, which can quickly lead to something
8 larger like an intercontinental ballistic missile. Russia
9 is a nuclear-armed nation. We definitely do not want that
10 technology to proliferate. And then it also opens up
11 additional fronts of concern during conflict.

12 Senator Rosen: Thank you. I appreciate that. We will
13 look forward to the closed session.

14 And I am going to build on this because we have
15 international partnerships, like they have international
16 partnership. We have our own international partnerships,
17 and so we work with our partners and allies. It is crucial
18 to providing this layered, comprehensive approach that we
19 are going to need to combat this.

20 So the success of international cooperation was
21 actually seen in the recent unsuccessful attack on Israel
22 carried out by Iran and the successful shoot-down of over
23 300 inbound threats. And that defensive action relied on
24 sharing space capabilities with our partners in the region.

25 So General, can you discuss the importance of these

1 international partnerships, as much as you can, in response
2 to what we just asked, and really about what happened just
3 recently. We thwarted that attack, helped to thwart that on
4 Israel by Iran.

5 General Guetlein: Yes, ma'am. I would say our
6 partnership, both with industry and with our allies, is one
7 of our competitive advantages that we continue to nurture
8 and to expand.

9 It is hard to be everywhere at all times. As you saw
10 in the Middle East, there were threats coming from multiple
11 different directions. And luckily we have spent many years
12 working with our allies to integrate our capabilities, so
13 that we see, they see, and that we can actually do handoffs
14 of threats from one nation to another, and that actually
15 paid a lot of dividends.

16 So going forward I would expect to see greater
17 partnerships with our allies, not less.

18 Senator Rosen: A lot of our strengths is in our
19 partnerships and our allies and friends around the world,
20 and that continued training and investing in that.

21 And speaking of investing in what you need to do all
22 this, it relies on technology. So we have to have the
23 technology workforce, and we have a huge shortage. There
24 is, not just in this area but in every area of technology,
25 it is a vital part of ensuring that every bit of our armed

1 services is capable and prepared for the threats that are
2 coming towards us, especially space.

3 So I am going to keep going back to you, General. As
4 the newest branch of the armed services, do you currently
5 possess and have access to the skilled workforce you need to
6 complete your mission, and what are the challenges that you
7 are facing recruiting? What do we need to do to help you
8 invest in that kind of workforce that you are going to need
9 to enter into, to keep us safe in space?

10 General Guetlein: Thank you, Senator. As I stated a
11 little bit earlier, our retention and our recruiting are
12 extremely high. We are exceeding our recruiting numbers
13 every year by several hundred.

14 But what is more important is the quality and the
15 experience level of those recruits is off the charts. Most
16 of them are a little older than their normal peers that are
17 coming in recruiting. Fifty-three percent of them have at
18 least a bachelor's degree or 14 hours-plus towards it.
19 Fourteen percent of our recruits actually have a bachelor's
20 degree or higher when we recruit them. It is a very
21 technical workforce.

22 So today we are meeting those numbers. The challenge
23 going forward is how do I grow efficiently. I cannot just
24 accept everybody that wants to come in today and get them
25 trained. So we are trying to balance our training resources

1 with how many people we can recruit going forward and what
2 is an efficient way to grow forward in the future.

3 Senator Rosen: Thank you. I appreciate that. I yield
4 back.

5 Senator King: Senator Kelly.

6 Senator Kelly: Thank you, Mr. Chairman. I am going to
7 start with the Secretary here. China and Russia are
8 continuously developing anti-satellite systems, and that
9 really concerns, I think, all of us. And I want to talk
10 specifically about one capability we have on orbit, and that
11 is the Space Based Infrared System that we use. It is on
12 orbit today, that we use to detect launches from the
13 surface, often strategic ballistic missiles that could be
14 heading in our direction. And they could be vulnerable.

15 And I want to understand from you, Mr. Secretary, have
16 we been thinking about the degradation and maybe denial of
17 use of that system and what that would mean overall to our
18 missile warning capability?

19 Mr. Calvelli: Yes. Yes, we have. In fact, we are re-
20 architecting that system and building a proliferated layer
21 at medium earth orbit and a proliferated layer at low earth
22 orbit. In fact, it was eight satellites that we launched
23 already for the LEO option, just against that threat. And
24 so we will maintain, through orbit diversity and through
25 proliferation, so we will maintain the geo-orbit for the

1 near term, we will have the MEO orbit coming of age,
2 starting in 2026, and we will have the LEO orbit starting to
3 get populated now.

4 So because -- you are totally correct -- because of the
5 threat against capabilities like missile warning that the
6 nation relies on and needs, we are fundamentally changing
7 the architecture to build a proliferated layer at LEO and
8 MEO that is much more highly resilient than the few big
9 targets at GEO.

10 Senator Kelly: And beyond that, we have a system that
11 looks over the horizon with radar. But beyond that, other
12 than the orbit capability, the infrared capability we have
13 from space, there is probably not many other ways to detect
14 the first launch of a ballistic missile. Is that correct?

15 Mr. Calvelli: I am not as familiar with our
16 terrestrial based systems. I know from space that we rely
17 really heavily on the old DSPs as well as what is known as
18 SBIRS, like you mentioned, for missile warning from space.

19 Senator Kelly: Yeah, I am really concerned about this,
20 because if we were to lose the Space-Based Infrared System
21 it makes us very vulnerable to a first strike without being
22 able to detect it.

23 Mr. Calvelli: You are right. But, I mean, on the good
24 side, sir, the Space Force has been very proactive in this
25 area. We are funded, and we are building, and we are

1 already starting to launch more proliferated systems that do
2 missile warning, and add capability to also help track.

3 Senator Kelly: And to the extent that we can talk
4 about it in this setting, can you give us an idea of when
5 this MEO and LEO system will be complete?

6 Mr. Calvelli: Yeah. So there are 8 demo satellites on
7 orbit in LEO today that are being tested. There is another
8 32 that will go up over the '25-'26 time frame in LEO. That
9 will be what we call our Tranche 1. And on the MEO side,
10 right now we planned 9 satellites in the '26-'27 time frame.

11 Senator Kelly: And what level of redundancy does that
12 provide us? So what I am getting at is how many of those
13 could we use in LEO and MEO and still retain the full
14 capability to detect a launch from Russia or China?

15 Mr. Calvelli: The system is really interesting. I
16 think our space warfighting analysis did a great job
17 designing it. And what it is, is that they are basically
18 independent layers. So you could take out all of one and
19 still do the mission with the other, as an example.

20 Senator Kelly: You could take out the LEO
21 constellation and you could get everything from MEO, or vice
22 versa.

23 Mr. Calvelli: Yeah.

24 Senator Kelly: Could you take out half of the MEO
25 satellites, as well, and get the coverage you need?

1 Mr. Calvelli: You know, the beauty of proliferation is
2 you get the coverage through having more assets. I think
3 the more you take out, the more capability you lose, right.
4 But building smaller systems you could replenish much
5 quicker, as well. But obviously, sir, you are right. The
6 more you take out, the more it hurts.

7 Senator Kelly: Yeah. All right. Thank you. Thank
8 you, Mr. Chairman.

9 Senator King: Thank you. We will have a second round
10 for those who are interested.

11 Mr. Hill, just to clarify in your exchanges with
12 Senator Warren, is there any evidence that Starlink or
13 SpaceX is willingly or knowingly allowing the Russians to
14 utilize those black market terminals that they have
15 acquired?

16 Mr. Hill: To the contrary. There is every evidence
17 that when SpaceX becomes aware of things they try to work
18 with U.S. government to come up with the best solution for
19 how to turn them off. To confirm, those terminals should be
20 turned off and that they are not getting like a false
21 positive.

22 Senator King: Yeah. So there is no evidence that
23 SpaceX is, as I say, willingly trying to utilize those.

24 Mr. Hill: You are correct.

25 Senator King: Thank you. General, you have talked

1 several times about working with allies. It strikes me that
2 that is one of our really asymmetric advantages. Are we
3 working with allies also -- and I suppose this could go to
4 either of you -- in terms of the development of these
5 technologies? In other words, all wisdom on technology does
6 not necessarily reside here, and we have got allies like
7 Japan, the EU, Scandinavia, that we could get more out of
8 our dollars if we are working jointly with these close
9 allies.

10 General Guetlein: Yes, Senator, we are. We are
11 building collaborative projects, for example, SATCOM with
12 Luxembourg, SATCOM with Norway, PNT with Japan. So we are
13 broadening out those partnerships on a daily basis, building
14 ground-based radars in Australia as well as in the U.K.,
15 collaborating on launch with New Zealand.

16 So we are, across the board, trying to embrace our
17 allies. And I will give kudos to our folks in policy that
18 were able to break down the classification barriers, that
19 once we put those into place will also allow us to have
20 broader conversations with our allies.

21 Senator King: In my discussions with so of our allies,
22 ITAR keeps coming up as a possible barrier. How are we
23 dealing with that?

24 General Guetlein: I would pass that to Secretary
25 Calvelli.

1 Mr. Calvelli: Passing to John Hill. That is a State
2 Department issue.

3 Mr. Hill: ITAR is always a concern allies will have if
4 they are worried about having to incorporate U.S.
5 technologies into systems they are developing. They worry
6 that somehow our licensing system will prevent them doing
7 what they want to do.

8 I think with respect to the question, though, of just
9 general collaboration between the Defense Department and
10 allies, as they grow their defense budgets to meet, for
11 example, NATO targets, ITAR is not really a factor in that
12 situation. We can develop the collaborative program and
13 then work with the allies.

14 Senator King: All of what we have been talking about
15 today in terms of defense has largely been about resiliency,
16 proliferation, many systems. The cornerstone of our defense
17 strategy for 70 years, however, has been deterrence, that
18 is, the adversary fears the consequences of an aggressive
19 action against this country. Is deterrence part of our
20 strategy in space, Mr. Secretary?

21 Mr. Calvelli: I think absolutely yes, but I think one
22 of the challenges is the classification levels.

23 Senator King: Well, it is not deterrence if the
24 adversary does not know about it.

25 Mr. Calvelli: You are correct, and I will defer to

1 General Guetlein on the Space Force on deterrence.

2 Senator King: That is Dr. Strangelove 101. General?

3 General Guetlein: Senator, integrated deterrence is a
4 foundation of our strategy. We do balance, on a day-to-day
5 basis, what capabilities we decide to reveal and conceal, to
6 make sure that the adversary knows that we are intent on
7 maintaining that capability gap and protecting and defending
8 our capabilities on a day-to-day basis.

9 So deterrence is the cornerstone of everything that we
10 are trying to do. And if you think back to General
11 Saltzman, one of his core themes is Competitive Endurance.
12 Under Competitive Endurance we would rather be in a state of
13 constant competition and to deter aggression rather than be
14 into a state of conflict.

15 Senator King: Thank you. I have to go to another
16 hearing. Vice Chair is going to preside, and it is over to
17 her for a second round of questions.

18 Senator Fischer: [Presiding.] Thank you, Mr.
19 Chairman. General, again to follow up with what the
20 Chairman was talking about and tying it into the budget, I
21 know there is a robust unfunded priorities list both from
22 General Whiting and from General Saltzman. And in this
23 setting can you discuss some of the general capabilities
24 that Space Force could move ahead with if you were provided
25 with those additional resources? When we talk about

1 deterrence that is the point of this.

2 General Guetlein: Yes, sir. Thank you, Senator.

3 General Saltzman, earlier last month, submitted our unfunded
4 priorities list to the tune of about \$1.15 billion. In that
5 list was resiliency for our ground systems, power upgrades,
6 HVAC systems what have you, because the Space Force fights
7 from in place, so in our facilities our power and cooling is
8 really our JPA, our fuel if you will. That is our weapons
9 system. So he is asking for money to invest in resiliency.

10 He asked for money in the Working Capital Fund to move
11 it from DISA over to the Space Force, so that we have a
12 business model to actually procure additional commercial
13 capacity for our warfighters and for our nation.

14 He asked for \$19 million for National Space Test and
15 Training Center, which is building out our ability to do
16 advanced tests and advanced training in a live, virtual,
17 constructive environment.

18 He asked for \$60 million to restore the Small Launch
19 Program so that we can provide ride shares to our industry
20 partners and to our academic partners.

21 He asked for \$786 million in classified space control
22 capabilities to ensure that we can protect and defend our
23 capabilities on space.

24 And he asked for \$43 million to allow the Space
25 Development Agency to do experimentation.

1 Senator Fischer: Thank you, sir, very much. Hopefully
2 we can start to deliver on some of those.

3 Senator Cramer, do you have additional questions?

4 Senator Cramer: I don't because [inaudible].

5 Senator Fischer: Thank you. Senator Rounds, any other
6 questions?

7 Senator Rounds: I do. Thank you, Madam Chair, or Vice
8 Chair. For Mr. Hill and General Guetlein, are you aware of
9 the 20-month EMBRSS study that was authorized to explore the
10 sharing of the electromagnetic spectrum in the critical 3.1
11 to 3.45 gigahertz band?

12 Mr. Hill: I am. General?

13 Senator Rounds: And are you aware that this was a
14 study that included the whole-of-government as well as
15 representatives of defense contractors and the
16 telecommunications industry?

17 Mr. Hill: Yes, Senator.

18 General Guetlein: Yes, Senator.

19 Senator Rounds: Are you aware of the finding of this
20 interagency study group that sharing in this band between
21 Federal and commercial systems is not feasible unless, and I
22 quote, "certain regulatory, technological, and resourcing
23 conditions are met and implemented"?

24 General Guetlein: Yes, Senator.

25 Mr. Hill: Yes, Senator.

1 Senator Rounds: Are you also aware that the estimate
2 of this interagency study was that implementing the
3 conditions could take 30 years and \$260 billion in this
4 portion of the electromagnetic band alone, even if the very
5 stringent conditions were able to be met?

6 General Guetlein: Yes, Senator.

7 Mr. Hill: Yes, Senator.

8 Senator Rounds: Are you also aware of the legislative
9 proposals in the Commerce Committee calling for the use of
10 the 728 gigahertz band to the spectrum, where the Space
11 Force and other services maintain similarly critical systems
12 for the defense of our country?

13 General Guetlein: Yes, Senator.

14 Mr. Hill: Yes, Senator.

15 Senator Rounds: Can you tell this subcommittee where
16 you stand on these efforts, if they proceed forward without
17 the most stringent conditions, such as the development and
18 implementation of the Dynamic Spectrum Sharing, the
19 interference safeguards, and a massive influx of Federal
20 resources to maintain the defense of this country?

21 General Guetlein: Senator, spectrum is vital to our
22 way of life. It is actually a natural resource just like
23 water or air. And just like water or air, we need to
24 protect that vital resource. We need to make sure it is not
25 contested, we need to make sure it is not polluted, and we

1 need to make sure it is not controlled.

2 If you look at the 7 to 8 gigahertz spectrum band that
3 you are talking about, that is where most of our NC3, so our
4 nuclear command and control capabilities, lie. Those
5 systems have been purposely designed for that spectrum, and
6 if we were pushed outside of that spectrum, those systems
7 that took us decades to develop and billions of dollars to
8 develop would have to be reconstituted in some sort of
9 fashion.

10 If you look at just the wideband gapfiller system, we
11 have 10 of those on orbit today, they cost about \$600
12 million apiece. Each one of those takes 4 years to develop.
13 Just looking at just that one piece of the architecture for
14 wideband gapfiller, that is \$6 billion and at least a decade
15 to reconstitute, to assume that we could even find another
16 spectrum that it could operate. You amplify that across all
17 of our capabilities and you start to see the large numbers
18 that you just talked about in that study.

19 So it would be detrimental to us to lose that spectrum.

20 Senator Rounds: Mr. Hill, anything to add to that?

21 Mr. Hill: That was an excellent summary of how we use
22 it. The national security community, Defense Department,
23 intelligence community, when we have been allocated spectrum
24 we have invested heavily to utilize that spectrum. The
25 nation has tremendous investments that are put at risk if we

1 carelessly start reallocating spectrum. The national
2 security community needs to be at the table whenever this
3 conversation comes up.

4 Senator Rounds: Would you suspect that our adversaries
5 would love to see us try to disrupt our ability to use those
6 specific bands?

7 General Guetlein: Absolutely.

8 Mr. Hill: Our adversaries always like to see us
9 disrupt ourselves.

10 Senator Rounds: We have met the enemy, and sometimes
11 the enemy is us.

12 One other thought. I note also that in the 3.1 to 3.4
13 gigahertz area the LRDR, or the long range discriminating
14 radar, actually sits in that band, as well, does it not?

15 General Guetlein: It does, and that is our last line
16 of defense to protect the homeland from a nuclear launch
17 from North Korea.

18 Senator Rounds: Thank you. Thank you, Madam Chair

19 Senator Fischer: Thank you, Senator Rounds, for
20 opening up that line of discussion, I would just follow
21 that up, as a member of the Commerce Committee, that there
22 are some bills out there that look at spectrum auctions.
23 There are deep concerns by many members, obviously on Armed
24 Services Committee, but on Commerce Committee, as well.

25 And do you believe it would be wise, in fact, it would

1 be vital for Senators before moving on any kind of
2 legislation to have auction in the bands that were discussed
3 previously by Senator Rounds, that they would at least
4 contact DoD for technical advise?

5 General Guetlein: Yes, Senator.

6 Mr. Hill: Yes. The Defense Department needs to be
7 part of the conversation.

8 Senator Fischer: Thank you. As you said, this is a
9 national security issue, and it would be detrimental for us
10 to lose access of that spectrum for our security. Am I
11 restating that correctly?

12 General Guetlein: Yes, Senator. It would be
13 detrimental for us to lose access to that natural resource.

14 Mr. Hill: Correctly and more succinctly than I usually
15 do.

16 Senator Fischer: You did a nice job, Mr. Hill. Thank
17 you very much. Anything else from Senators that are
18 present?

19 Thank you very much, and with that I thank our panel
20 for being here. I look forward to continuing our
21 discussions, and the hearing is adjourned. Thank you.

22 [Whereupon, at 10:42 a.m., the subcommittee was
23 adjourned.]

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