

Stenographic Transcript
Before the

COMMITTEE ON
ARMED SERVICES

UNITED STATES SENATE

HEARING TO RECEIVE TESTIMONY ON
UNITED STATES STRATEGIC COMMAND AND UNITED
STATES SPACE COMMAND IN REVIEW OF THE DEFENSE
AUTHORIZATION REQUEST FOR FISCAL YEAR 2023 AND THE
FUTURE YEARS DEFENSE PROGRAM

Tuesday, March 8, 2022

Washington, D.C.

ALDERSON COURT REPORTING
1111 14TH STREET NW
SUITE 1050
WASHINGTON, D.C. 20005
(202) 289-2260
www.aldersonreporting.com

1 HEARING TO RECEIVE TESTIMONY ON
2 UNITED STATES STRATEGIC COMMAND AND UNITED STATES SPACE
3 COMMAND IN REVIEW OF THE DEFENSE AUTHORIZATION REQUEST FOR
4 FISCAL YEAR 2023 AND THE FUTURE YEARS DEFENSE PROGRAM

5
6 Tuesday, March 8, 2022

7
8 U.S. Senate

9 Committee on Armed Services

10 Washington, D.C.

11
12 The committee met, pursuant to notice, at 9:30 a.m. in
13 Room SD-106, Dirksen Senate Office Building, Hon. Jack Reed,
14 chairman of the committee, presiding.

15 Committee Members Present: Senators Reed [presiding],
16 Shaheen, Gillibrand, Blumenthal, Kaine, King, Warren,
17 Peters, Rosen, Kelly, Wicker, Fischer, Cotton, Rounds,
18 Ernst, Tillis, Cramer, Scott, Blackburn, Hawley, and
19 Tuberville.

1 OPENING STATEMENT OF HON. JACK REED, U.S. SENATOR FROM
2 RHODE ISLAND

3 Chairman Reed: Let me call this hearing to order.

4 Good morning. The Committee meets today to receive
5 testimony from Admiral Charles Richard, Commander of U.S.
6 Strategic Command, or STRATCOM, and General James Dickinson,
7 Commander of U.S. Space Command, or SPACECOM. Admiral
8 Richard, General Dickinson, I want to thank you for your
9 service to our nation, and I would like to extend my thanks
10 to the men and women serving under your commands.

11 Maintaining our nuclear deterrent and preserving our
12 ability to operate in space are fundamental to our long-term
13 strategic competition with Russia and China.

14 There is a reason we have asked the commanders of
15 STRATCOM and SPACECOM to testify together. Until 2019,
16 Space Command was part of Strategic Command. Now, as
17 SPACECOM stands up as an independent command, I would like
18 to know what gaps or seams remain exposed during this
19 transition and how they can be addressed.

20 Much has changed since our last hearing in 2021.
21 Russia's ongoing unprovoked and illegal invasion of Ukraine
22 has shaken the international order that has maintained
23 nuclear stability for the better part of a century.
24 Vladimir Putin's behavior has been reckless to a dangerous
25 degree. Just prior to its invasion, Russia conducted a

1 large out-of-cycle nuclear exercise, and the Kremlin has
2 since made a series of escalatory statements. Normally,
3 Russia conducts its nuclear exercises in the fall and the
4 United States conducts ours afterwards in a stable,
5 predictable fashion. Not so this year. More than ever, our
6 nuclear deterrent, the bedrock of our national defense, is
7 being relied upon as we witness the realities of a European
8 conflict involving a nuclear armed nation.

9 In the past year, we have also seen China develop three
10 missile fields in hardened silos throughout the country.
11 This development, along with China's completion of its
12 nuclear triad and modernization of its nuclear command,
13 control, and communications fundamentally change the nature
14 of Beijing's nuclear doctrine. We need to understand why
15 China is undertaking this expansion, what it means for
16 stability in the Indo-Pacific region, and how we should
17 adjust our own nuclear deterrence to protect our nation and
18 uphold the fundamental extended commitment to our allies.

19 Similarly, over the past year we gained a clearer
20 picture of the threat we face in space, which has become a
21 contested domain. In any future conflict, China will
22 quickly extend its capabilities into space in a seamless
23 fashion. Russia, for its part, acted recklessly in November
24 by destroying a satellite in space while building up forces
25 on the Ukrainian border. During today's hearing we will

1 discuss these threats and the nature of conflict we can
2 expect in space in the years to come.

3 In particular, General Dickinson, I would like to make
4 sure that SPACECOM is fulfilling the space and ground
5 functions you inherited from STRATCOM with respect to
6 missile warning and nuclear command, control, and
7 communications. Ensuring we can accurately warn both
8 Strategic and Northern Commands, and our senior leadership,
9 of a missile attack on the homeland is of the utmost
10 importance.

11 SPACECOM is also responsible for integrating and
12 tasking both ground and space sensors for better space
13 situational awareness, essentially becoming DoD's "sensor
14 command." General Dickinson, I ask that you share your
15 vision on how to integrate this myriad number of sensors,
16 which range from radars on the ground and at sea to sensors
17 aboard satellites.

18 General, I would also like to know the progress your
19 command is making during its stand-up and how you are
20 finding and retaining personnel with the specialized skill
21 sets associated with SPACECOM operations.

22 Admiral Richard, your command is undergoing an intense
23 period of modernization that began with the ratification of
24 the New START Treaty. This will be the third modernization
25 cycle since 1960, as parts of each leg of our triad age out.

1 I am interested in hearing about the progress of modernizing
2 the entire triad and the implications of altering that plan,
3 especially with respect to our near-peer competitors.

4 In addition, I would like to know your views on the
5 efforts by the National Nuclear Security Administration to
6 re-capitalize its uranium and plutonium handling
7 infrastructure. Some of these facilities date back to the
8 Manhattan Project and are single points of failure in
9 supporting your mission. It is essential that we understand
10 what impacts this may have on your operations.

11 Thank you again for appearing today and I look forward
12 to your testimonies.

13 Ranking Member Inhofe cannot be here today. We
14 anticipate he will return next week. But I would ask that
15 his opening statement be submitted to the record, and
16 without objection, so ordered.

17 [The prepared statement of Senator Inhofe follows:]
18
19
20
21
22
23
24
25

1 Chairman Reed: And I would also note for my colleagues
2 that there will be a classified briefing immediately
3 following this session in SVC-217 to continue our
4 discussion.

5 And with that let me recognize Admiral Richard.

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

1 STATEMENT OF ADMIRAL CHARLES RICHARD, COMMANDER,
2 UNITED STATES STRATEGIC COMMAND

3 Admiral Richard: Chairman Reed, distinguished
4 committee members, I am pleased to testify today with my
5 fellow combatant commander, General Dickinson.

6 Before I begin, given the ongoing and historically
7 significant crisis that is happening in Ukraine right now, I
8 am going to need to defer all questions regarding Russia and
9 a number of questions related to our own forces to the
10 closed session.

11 I want to thank Secretary Austin, Chairman Milley for
12 their continued support to the strategic deterrence and
13 strategic defense of the nation as well as their overall
14 leadership under some very trying conditions.

15 Ladies and gentlemen, right up front I want to assure
16 you that the 150,000 soldiers, sailors, airmen, marines,
17 guardians, civilians of U.S. Strategic Command, as always,
18 are ready to execute our strategic deterrence mission.

19 Chairman Milley rightly stated, we are witnessing one
20 of the largest shifts in global geostrategic power the world
21 has ever witnessed. Today we face two nuclear-capable near-
22 peers who have the capability to unilaterally escalate to
23 any level of violence, in any domain, worldwide, with any
24 instrument of national power, at any time, and we have never
25 faced a situation before like that in our history.

1 Last fall, I formally reported to the Secretary of
2 Defense the PRC's strategic breakout. Their expansion and
3 modernization in 2021 alone is breathtaking, and the concern
4 I expressed in my testimony last April has now become a
5 reality. I had previously emphasized our need to be able to
6 deter two adversaries at the same time. That need is now an
7 imperative.

8 I have said this before and I think it is worth
9 repeating. Every operational plan in the Department of
10 Defense and every other capability we have rests on an
11 assumption that strategic deterrence is holding, and in
12 particular that nuclear deterrence is holding. If strategic
13 or nuclear deterrence fails, no other plan and no other
14 capability in the Department of Defense is going to work as
15 designed. The nation's nuclear forces underpin integrated
16 deterrence and enable the U.S., our allies, and our partners
17 to confront aggressive and coercive behavior.

18 The strategic security environment is now a three-party
19 nuclear near-peer reality. Today's nuclear force is the
20 minimum required to achieve our national strategy. Right
21 now I am executing my strategic deterrence mission under
22 historic stress, crisis levels of deterrence, crisis
23 deterrence dynamics that we have only seen a couple of times
24 in our nation's history, and I am doing it with submarines
25 built in the '80s and '90s, and air-launched cruise missile

1 built in the '80s, intercontinental ballistic missiles built
2 in the '70s, a bomber built in the '60s, part of our nuclear
3 command and control that predates the internet, and a
4 nuclear weapons complex that dates back to the Manhattan
5 era.

6 We must modernize the nuclear triad, the NC3, the
7 nuclear weapons complex, and supporting infrastructure to
8 meet presidential objectives. And while modernization must
9 be the priority, please make no mistake. STRATCOM's forces
10 are ready today.

11 Thank you, and I look forward to your questions.

12 [The prepared statement of Admiral Richard follows:]

13

14

15

16

17

18

19

20

21

22

23

24

25

1 Chairman Reed: Thank you very much, Admiral.

2 General Dickinson, please.

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

1 STATEMENT OF GENERAL JAMES DICKINSON, COMMANDER,
2 UNITED STATES SPACE COMMAND

3 General Dickinson: Good morning, ladies and gentlemen,
4 and thank you, Chairman Reed and members of the Senate Armed
5 Services Committee. As always, I am honored today to
6 represent the approximately 18,000 men and women of the
7 United States Space Command. We are a joint and diverse
8 team of professionals who value the honorable service of
9 everyone within our ranks.

10 Today we are not only in full support of our joint
11 forces globally and NATO in Europe but we remain hard at
12 work building the command toward full operational
13 capability. We are steadily building the capability and
14 capacity in our headquarters, and its composition reflects
15 our joint, combined, and partnered approach to executing our
16 critical mission. As of this month we have over 1,000
17 members assigned to our headquarters, including civilians,
18 contractors, active-duty personnel from all services,
19 representatives from the interagency, and servicemembers
20 from the National Guard and Reserves.

21 We also recognize the vital importance of our allies
22 and partners through the contributions of an assigned
23 international general office and two international liaison
24 officers on our staff. We are pleased to have all of them
25 on our team.

1 Responding to the threats to the U.S. and allied
2 interests in space demands the teamwork and expertise of
3 every one of our people. We are prepared to execute our
4 unified command plan missions and responsibilities, yet
5 acknowledge that the challenges from our competitors in the
6 domain are substantial and, in fact, growing.

7 China remains our pacing challenge. Current PLA
8 development is directed towards creating a joint, versatile,
9 professional, and lethal force capability of power
10 projection globally, and the space layer is critical to
11 their efforts. In 2021, the PRC increased on-orbit assets
12 by 27 percent. This increase brings their on-orbit
13 satellite total from just over 100 satellites 10 years ago
14 to more than 500 satellites today. Their recent counter-
15 space capability demonstrations include the DN-1 and the DN-
16 2 direct descent anti-satellite tests and a hypersonic glide
17 vehicle test.

18 In October of 2021, the PRC launched their SJ-21
19 satellite, described as a, quote, "space debris mitigation,"
20 end quote, satellite. In January, the SJ-21 docked with a
21 defunct PRC satellite and moved it to an entirely different
22 orbit. This activity demonstrated potential dual-use
23 capability in SJ-21 interaction with other satellites and
24 builds on the previous demonstrations in late 2016 of
25 potential dual-use capability that we saw in the SJ-17.

1 Over the past 2 weeks we have witnessed Russian
2 aggression in Europe on a significant scale. Space is not a
3 sanctuary from similar behavior. Russia is actively working
4 to regain its prestige as a space power. The destructive
5 direct ascent test just this last November is an example of
6 their activity. Space is no longer a sanctuary, and U.S.
7 Space Command stands ready to protect and defend the space
8 assets of the United States and our partners and allies.

9 U.S. Space Command is committed to deterring the use of
10 any space capabilities for nefarious purposes within the
11 framework of the Department of Defense Integrated Deterrence
12 Strategy. Key to all of this is U.S. and allied space
13 superiority informed through space domain awareness, or SDA,
14 capabilities. SDA helps us analyze, not just identify, what
15 is occurring in space, which when combined with the
16 information from our intelligence agency helps develop an
17 understanding of why things are happening, characterize
18 intent, and provide decision advantages to our leaders. Our
19 SDA capabilities are part of a broader resilience space
20 architecture that enables command and control and provides
21 the tools to sustain freedom of action in the space domain.

22 Within this broader resilience space architecture, SDA
23 remains my top mission priority for U.S. Space Command. SDA
24 provides the backbone of U.S. Space Command's strategy for
25 accomplishing our mission. That strategy sets the

1 conditions to understand and attribute activities in space.
2 This enables our mission to deter first, and when called
3 upon, to defend space capabilities and to deliver combat
4 power for the United States and our allies.

5 Our strategy has three main areas of focus: first,
6 countering competitive influence; second, strengthening
7 relationships and attracting new partners; and third,
8 building and maintaining a competitive edge. With continued
9 support from Congress, U.S. Space Command will do all of
10 that and more. U.S. Space Command is postured to protect
11 and defend the space domain while ensuring continuous space
12 effects are delivered to our joint and combined force.

13 I assure you, here today, that U.S. Space Command is
14 ready. So on behalf of the most critical resource in our
15 command, the soldiers, marines, sailors, airmen, guardians,
16 civilians, and families of the command, thank you, Chairman
17 Reed and members of this Committee, for your support of our
18 mission to conduct operations in, from, and to space.

19 I submit my statement for the record, and I look
20 forward to your questions.

21 [The prepared statement of General Dickinson follows:]
22
23
24
25

1 Chairman Reed: Thank you very much, General Dickinson.
2 And Admiral Richard, I concur with your assessment that we
3 should reserve questions regarding Ukraine and Russia to the
4 closed session, so I will do that.

5 But let me begin with a question regarding the
6 modernization of the triad and also the capabilities at the
7 National Nuclear Security Administration. You have said in
8 the past that we are at a point of no return, so can you
9 please elaborate a bit, particularly with respect to
10 Minuteman-III ICBMs and the pit production capability at
11 NNSA.

12 Admiral Richard: Chairman, one, I am pleased to
13 report, based on what services and agencies are reporting,
14 that the overall recapitalization of the triad is on track.
15 No margin is left, but right now all of those programs are
16 proceeding the way that is necessary for them to deliver
17 capability on time to meet my requirements.

18 The weapons complex is a different story, and we have
19 crossed one of those points of no return that I referred to
20 previously in that we now know we will not get 80 pits per
21 year by 2030, as is statutorily required. And even
22 unlimited money at this point will not buy that back.

23 So there is active work underway inside the Nuclear
24 Weapons Council to understand exactly how much of a delay we
25 are going to have, how much of it can be addressed by

1 funding. The fundamental question we have to answer to
2 Congress is to certify NNSA's budget.

3 And I want to make another point here, which is we are
4 not mitigating this problem. We have shot all the
5 mitigation to get us to this point. It is the fourth time
6 the nation has tried to recapitalize its pit production
7 infrastructure. Now the question becomes how much damage
8 have we done and what are the consequences of that, and we
9 are working to better understand that, sir.

10 Chairman Reed: Thank you very much, Admiral. Also, we
11 are working on a Nuclear Posture Review. I know you are
12 deeply involved that. And a key element is our declaratory
13 policy, what is our intention in terms of use, in terms of
14 our strategy. What is your assessment of our extended
15 deterrence commitment to our allies, particularly in light
16 of current hostilities, and any perception of changes in the
17 declaratory policy?

18 Admiral Richard: Senator, what I will offer is that I
19 have testified to this committee and others as to my
20 recommendations with regard to possible changes to
21 declaratory policy. Those have not changed. That was a
22 part of my input into the Nuclear Posture Review. As you
23 know, that ultimately will be decided by the President.

24 We received very clear feedback from the allies in
25 terms of their opinion and the harmful effects on extended

1 deterrence and assurance that changes would have. That is
2 one factor of many to be considered.

3 I do think right now we are getting a very vivid
4 example, real-world, of the importance of extended
5 deterrence and assurance, that if we want our allies to
6 assist us in standing up to aggression we have to provide
7 that assurance to them such that they are in a position go
8 after our mutual goals.

9 Chairman Reed: Thank you, Admiral.

10 General Dickinson, in some respects you have been
11 promoted to Sensor Command as well as Space Command, because
12 one of your first major tasks is to link sensors both in
13 space, on the earth, and below the seas. Can you give us an
14 idea of what it will take to perform this integration and
15 where you might be now?

16 General Dickinson: Thank you, Chairman. So we have
17 made a lot of progress over the last 2, 2 1/2 years with
18 identifying and incorporating sensors that we traditionally
19 did not use for space domain awareness, missile warning, or
20 missile defense in the global perspective. And we have
21 really identified radars such as TPY-2s around the world as
22 well as BMD, ships afloat, and Aegis Ashore sites as well.
23 And our goal is to link these sensors together from a
24 terrestrial perspective.

25 We add to those. We add the UEWRs that we have

1 traditionally used for NC3 around the world for early
2 warning and brought all those terrestrial capabilities to
3 bear, if you will, in terms of understanding what we see in
4 the space domain.

5 In addition to that, we are linking our space-based
6 assets in addition to that, bringing them into a common
7 operating picture. We still have work to be done with
8 regards to that, but we have made some good progress over
9 the last 2 years, 2 1/2 years, and we are working towards
10 that, the ultimate piece, where we have one operating
11 picture that has those sensors fused into it. And that
12 really kind of pulls in some of the work that the Department
13 of the Air Force is doing with JADC2 and some of those ABMS
14 efforts that are going on right now.

15 And as you can imagine, Chairman, that has a massive
16 data burden, if you will, that has to be properly
17 synthesized, properly organized, making sure that it is
18 cyber protected so that you have a database and you have
19 information that is authoritative and available at the speed
20 of relevance.

21 Chairman Reed: The backbone of this is constant,
22 uninterrupted, encrypted communication between all your
23 assets. Is that one way to look at it?

24 General Dickinson: That is one way to look at it, yes,
25 Chairman.

1 Chairman Reed: And are we getting there?

2 General Dickinson: We are getting there. We are
3 getting there, and like I said, those are sensors, many of
4 those sensors, TPY-2s, BMD, Aegis BMD ships, those sensors
5 traditionally were not required or expected to have a
6 capability looking up in the space domain, but what we are
7 finding out is those exquisite radars do have capability.
8 And what capability we need to add to that we are
9 identifying those gaps in requirements now at U.S. Space
10 Command, and then putting that demand signal back onto those
11 specific assets.

12 Chairman Reed: Thank you very much, gentlemen.

13 Senator Wicker, please.

14 Senator Wicker: Thank you very much, Mr. Chairman, and
15 General Dickinson and Admiral Richard, thank you very much
16 for your service on a very, very vital part of our national
17 defense strategy.

18 Admiral Richard, the United States is currently engaged
19 in negotiations with Iran on the Iran nuclear deal. Can you
20 tell me, are you being consulted about those negotiations?

21 Admiral Richard: Senator, I am not, and that is
22 appropriate. My forces do not play a role in terms of where
23 that treaty and our overall desire to avoid Iran from
24 getting a nuclear weapon.

25 Senator Wicker: So your experience in making our

1 nuclear policy work is not deemed important to those who are
2 negotiating how we go forward with Iran?

3 Admiral Richard: Senator, as you know I do not enter
4 into treaties or agreements. That is a Department of State
5 function. What I do is provide technical expertise. For
6 example, I had my deputy commander as a part of the New
7 START Treaty negotiation team so that that team had
8 immediate access to any operational implications of what
9 they were doing. While I am certainly available to do the
10 same thing for those negotiations, currently that is not
11 needed.

12 Senator Wicker: Okay. Well, I may not get an answer
13 to this question but it is a question that is on the minds
14 of Americans today. We are told, with relative certainty,
15 that the talks are going on and that Russia is a part of the
16 nuclear discussions between the United States and Iran about
17 reentering this nuclear deal.

18 Let me just say, Russia is led by the dictatorship and
19 the kleptocracy of Vladimir Putin, a serial international
20 war criminal. And it is astonishing to me that they would
21 be anywhere near the negotiating room in a process that
22 might lead us to making concessions to Iran that we would
23 not otherwise have made. You probably do not want to
24 comment on that, I guess, Admiral.

25 Admiral Richard: Senator, what I would look forward to

1 commenting in the closed session, is an overall assessment
2 of threats to the nation and how we are going to defend and
3 deter against those.

4 Senator Wicker: Okay. Let me leave it at that, but I
5 would simply say, Mr. Chairman, and to my colleagues and to
6 my fellow Americans that it is highly troubling, I think to
7 most Americans, that Vladimir Putin would have anything at
8 all to say about any decision the United States would make
9 about what is best for our people and our national security,
10 considering the fact that he is, without a doubt, a serial
11 war criminal.

12 The distinguished ranking member of this committee, Mr.
13 Chairman, has suggested a question or two, which I would
14 like to submit on his behalf.

15 Russia has a nuclear arsenal larger and more modern
16 than the United States, and currently threatened nuclear
17 escalation during the invasion of Ukraine. Admiral Richard,
18 we have heard for a long time how critical it is that we
19 rebuild our nation's nuclear deterrent, but we are still
20 years away from fielding any new systems. How important is
21 it that we accelerate the U.S. nuclear modernization plan as
22 quickly as possible?

23 Admiral Richard: Senator, I would offer three points
24 on that, and again can go into more detail in the closed
25 session. It is very clear that the absolute minimum that we

1 need to do is to recapitalize the triad, the nuclear command
2 and control, and the nuclear weapons complex.

3 But there are two other questions we need to be asking
4 ourselves along the way with that. The threats are changing
5 in a way that we have not seen in 30 years. We do not know
6 the endpoints of where either of those other two are going,
7 either in capability or capacity. We are just now starting
8 to work out what three-party stability looks like, what
9 three-party deterrence dynamics works out.

10 On top of that, we are learning a number of lessons in
11 real time on how actual crisis deterrence works. It is
12 different from steady-state deterrence that most of us have
13 experience in.

14 Those two questions, I think, need to be asked much
15 more frequently than we have needed to in the past, followed
16 with what is the capability, capacity, and posture we
17 require from our strategic forces moving forward.

18 Senator Wicker: And, Mr. Chairman, if you would
19 indulge me for another moment with regard to a question that
20 the ranking member has asked repeatedly and which deserves
21 to be asked today.

22 Admiral Richard, you have testified that you do not
23 believe it is in the national interest of the United States
24 to change our policy with regard to no-first-use or sole
25 purpose nuclear declaratory policy. Would you explain why

1 that has been, and is it still your position?

2 Admiral Richard: Well, Senator, I have testified to
3 that and my position is unchanged. That, of course, will be
4 decided along with a number of other factors and we will see
5 what the answer is in the Nuclear Posture Review. But
6 fundamentally I can go into a lot longer answer, but is,
7 one, your adversaries will not believe you so it does not
8 enhance deterrence in any way, but your allies will believe
9 you and it is highly corrosive to your extended deterrence
10 and assurance commitments.

11 Senator Wicker: Thank you, Mr. Chair.

12 Chairman Reed: Thank you, Senator Wicker.

13 Senator Gillibrand, please.

14 Senator Gillibrand: Thank you, Mr. Chairman. General
15 Dickinson, I am concerned that our lack of international
16 agreements barring conventional weapons in space has led to
17 a space arms race that threatens our civil and commercial
18 systems in space. How much of a role is SPACECOM playing in
19 developing international norms about the use of weapons in
20 space?

21 General Dickinson: Thank you, Senator, for the
22 question. In my job as the SPACECOM Commander I work very
23 closely with the Department of Defense, and in particular
24 the policy folks in the Department of Defense in terms of
25 working through those types of issues. What I have been

1 charged to do, by the Secretary of Defense back in July, was
2 he gave me a memo that outlined the five tenets of
3 responsible behavior for the Department of Defense. And so
4 right now we are working through how we implement that
5 within the department.

6 But to your point is that with those tenets become our
7 base plate, if you will, that we talk with the Department of
8 Defense, and then subsequently they would start talking with
9 Department of State.

10 So we have kind of an indirect role that we start kind
11 of from the combatant command up through the department in
12 that regard. But those tenets of responsible behavior,
13 there are five of them, and I think they are very good in
14 terms of outlining what we would expect not only for the
15 Department of Defense in terms of responsible behavior but
16 for our allies and partners. We have had a lot of good
17 discussions on that in several different forms.

18 Senator Gillibrand: Given the lack of codified norms
19 in space, what, in your view, constitutes an armed attack in
20 the domain and how would you deal with a proportionate
21 response?

22 General Dickinson: Well, Senator, I would say that,
23 you know, these tenets, I think, outline kind of what we
24 would think as responsible behavior in space, and as we look
25 through that, how do we make sure that we are able to

1 understand that. I think the first thing we have to look at
2 is how well can we understand what is happening in the space
3 domain.

4 As I mentioned in my opening remarks, my number one
5 priority for the command, or top priorities is to be able to
6 increase my space domain awareness so I can interpret and
7 understand what those norms of behavior or those tenets are
8 in space.

9 Senator Gillibrand: The "valley of death" in
10 acquisition references the transition from innovative,
11 small-scale projects to full-scale funded programs, which is
12 often stunted with budget challenges, risk mitigation, and
13 integration problems leading to immense waste. Innovative
14 technology and the ability to quickly field the warfighter
15 in space is critical to matching China's competencies.

16 In your view, is the use of other transaction
17 agreements or OTAs by the DoD being effectively implemented,
18 and do we need more emphasis on non-Federal acquisition
19 regulation contracting solutions?

20 General Dickinson: So Senator, in my role right now I
21 am a customer, if you will, for the United States Space
22 Force and some other agencies, and I would categorize myself
23 as a demanding customer. And I think we have to move very
24 quickly in terms of building new and better capabilities for
25 the space domain. And so I know that the Space Force and

1 the Department of the Air Force are looking right now in
2 terms of how do they streamline those processes in order to
3 deliver capabilities to me on a much faster timeline.

4 Senator Gillibrand: Thank you. Admiral Richard,
5 JADC2, over the past several years DoD has worked on
6 developing JADC2 architecture to speed sensor to shooter
7 responses and integrate communications across the services.
8 In your view, how should DoD prioritize competing
9 communications requirements for its future work, and what
10 role, if any, will artificial intelligence play in future
11 non-nuclear command and control decision-making systems?

12 Admiral Richard: Senator, I would like to point out
13 that, one, I am responsible for nuclear command and control
14 from an operations requirements and systems integration
15 piece, and in that responsibility I am very familiar with
16 what JADC2 is doing in conventional command and control, and
17 in fact was very pleased that a subset of what JADC2 is
18 doing is for nuclear command and control. The two systems
19 have to be overlapped to a great extent, so that we can have
20 integration.

21 So we are headed in the right path to make sure we take
22 full advantage of the investments we are making in
23 conventional command and control, while recognizing that
24 certain portions of nuclear command and control have to
25 serve at a higher standard than we ask regular command and

1 control, and making sure we identify those and meet those
2 requirements.

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

5 Chairman Reed: Thank you very much, Senator
6 Gillibrand.

7 Senator Tuberville, please.

8 Senator Tuberville: Thank you, Mr. Chairman. Thanks
9 for being here today with all the problems going on.

10 General Dickinson, Space Command is designated a
11 geopolitical command. How do you plan to synchronize
12 efforts with other geographic commands in a time of
13 conflict? I mean, I am sure you have worked on that?

14 General Dickinson: Thank you, Senator. Absolutely.
15 We do that every day. In particular, we have exercised it
16 through many different exercises over the last couple of
17 years. I think we have had five major exercises.

18 But to your point, we do that each and every day, and
19 the way we do that is when the U.S. Space Command was stood
20 up in 2019, we identified a gap, if you will, within each of
21 the combatant commands in terms of space expertise. And so
22 one of the first things we did as we stood up was we
23 immediately started putting what we call joint integrated
24 space teams, or JISTs, within each of the combatant
25 commands, and we kind of started that with INDOPACOM, EUCOM,

1 CENTCOM, and we are working through the other 10 combatant
2 commands now.

3 But these elements, at the beginning we thought would
4 have a planning-only function within these commands. What
5 we found out, through day-to-day operations and through
6 exercises and real-world events, is that it is more than
7 just planning. It is planning. It is operations. It is
8 intelligence. It is the integration of those capabilities
9 within each of the combatant commands that provides that
10 regional combatant commander space expertise and the ability
11 to leverage the space domain in order to meet their
12 requirements for their either day-to-day operations or their
13 op plans.

14 Senator Tuberville: Thank you. Pretty complex,
15 especially being new.

16 Admiral, last year you said, quote, "For the first time
17 in history the nation is facing two potential strategic
18 peer, nuclear-capable adversaries at the same time." But
19 our nuclear posture, my understanding, has been not about
20 two threats. So in your best military advice, should the
21 U.S. consider changes to the size of its nuclear force in
22 order to account for having now two peer threats?

23 Admiral Richard: Senator, first, I have already
24 repostured it, and I will be happy to give you some details
25 of what we have done in the closed session. The answer is

1 yes. We do not necessarily have to match weapon for weapon,
2 right. The key is do you have enough capability to execute
3 your strategy. But it is clear what we have today is the
4 absolute minimum, and we are going to have to ask ourselves
5 what additional capability, capacity, and posture do we need
6 to do, based on where the threat is going. It is not all
7 strategic. There is a significant class of theater threats
8 that we are going to have to rethink potentially how we
9 deter that.

10 You have to deter them all the time. I do not get the
11 luxury of having a priority to one and lesser to the other.
12 You have to do them all at the same time. And we are
13 learning a number of lessons in crisis dynamics, because we
14 have had so few times in our history we have been in that,
15 that those will need to be applied too, sir.

16 Senator Tuberville: How does the hypersonic missile,
17 now that we are seeing online, how does that change us in
18 terms of your thoughts on the time frame of a threat, how
19 quick we have to respond?

20 Admiral Richard: I look at hypersonics in two ways.
21 One is the threat that it presents to us, and that
22 fundamentally is a warning problem. In fact, the chairman
23 mentioned seams opening up with the establishment of Space
24 Command. Actually, it has worked the exact opposite of
25 that. We mentioned the sensor commander, which is what I

1 like to call it. Technically in DoD it is sensor manager,
2 but sensor commander sounds better.

3 The way Jim is integrating across missile defense,
4 missile warning, and space situational awareness, he is
5 producing a better outcome than what we had in the past, and
6 I am actually getting a better service because of his
7 efforts in that. That is defensive.

8 Offensive, I will be ready to put online the first day
9 any service makes it available a hypersonic capability. I
10 have work for it right now. We have had requirements dating
11 back to 2016 and earlier, and I will put that to good use
12 the first day any service makes it available in defense of
13 the nation.

14 Senator Tuberville: Thank you. Now that we do have
15 hypersonics, just from my information, I am sure were
16 changing protocol for our President, because it takes a
17 pretty good while to get all the factors done to get to a
18 point where a President can make a decision. Please tell me
19 we are changing those protocols to answer a first attack.

20 Admiral Richard: Senator, one, I think it will be
21 important that as a hypersonic capability comes into the
22 Department of Defense that we not label it as strategic or
23 theater or tactical. We already have examples of platform.
24 My bombers are an example. I can use it strategically down
25 one command and control decision path that you talked about.

1 I can use them conventionally down another. I can give them
2 to a geographic combatant commander for that commander's
3 use. And I think we are going to want an equivalent,
4 flexible, command and control structure for hypersonics.

5 Senator Tuberville: Thank you, Mr. Chairman.

6 Chairman Reed: Thank you, Senator Tuberville.

7 Senator King, please.

8 Senator King: Thank you, Mr. Chairman. Before
9 beginning my questions I wanted to respond to Senator
10 Wicker. We have a national interest in Iran not obtaining a
11 nuclear weapon. Russia has a national interest in Iran not
12 obtaining a nuclear weapon. If, in this particular case, we
13 have an identity of interest it would seem to me to make
14 sense to have both parties at the table. We are not
15 negotiating with Russia. We are negotiating with Iran. And
16 if they can add weight to those negotiations, as they did in
17 the initial negotiations, it seems to me that serves our
18 national interest.

19 Let me turn to General Dickinson. ISR is very
20 important generally, but I want to talk about a war that is
21 not Ukraine. It is the war that is killing our people in
22 Maine, two a day, and I refer to the international trade of
23 narcotics. The question is, do we have sufficient space
24 assets that can provide ISR and monitoring of drug shipments
25 that can assist us in interdicting those drug shipments and

1 preventing the death of our people? This is a war that is
2 killing Americans in a large number every single day, and to
3 say we cannot afford to watch what is going on with those
4 shipments, particularly from Latin America and the
5 Caribbean, it seems to me is a dereliction of our duty to
6 defend the country.

7 General Dickinson: Senator, up front I would say that
8 is a little bit maybe out of my purview as a combatant
9 commander in the Department of Defense. However, I would
10 say to you that watching the -- to answer your question, I
11 think when you look at the explosion in the commercial
12 market in terms of ISR, and quite frankly some of the things
13 that we have just seen in the Ukraine situation over the
14 last couple of weeks with regards to -- we are all watching
15 TV and we see those images, you know, many of those, if not
16 all of those are coming from a commercial company.

17 And so what is interesting is how much that commercial
18 market has expanded, exploded if you will, to provide us
19 additional capabilities. And so, in other words, I think we
20 have a big enough commercial market that can satisfy that
21 demand signal, and really for us, in U.S. Space Command,
22 with that augmentation we are able to use our military type
23 of ISR assets to do some other things.

24 Senator King: I hope you are right, but the word that
25 disturbed me in your answer was one of your first words,

1 which was "not in my purview." That is my problem. It does
2 not seem to be in anybody's purview. We have got DEA, we
3 have got DHS, we have got the military, and we have got
4 people dying. And I would hope that you would consider
5 discussing this question to me. If this were an attack by
6 another adversary on our country that was killing thousands
7 of people a day, it would be within your purview. I am
8 suggesting it is within your purview, and I hope that you
9 will review that.

10 Let me ask a second question on your satellite
11 capability. There has been a lot of discussion about
12 resilience and redundancy. How are we in terms of cyber
13 resilience, in terms of our space assets, blocking of
14 signals, stealing of information coming from satellites?

15 General Dickinson: Senator, so when we stood up the
16 Command in 2019, we made a very deliberate effort to make
17 sure that we did not add cyber onto the equation as we grew.
18 We built it in from the very beginning as we looked at our
19 organization. And so from an organizational perspective we
20 have got cyber expertise and capabilities built within the
21 Command that is in particular in the headquarters.

22 So in the headquarters that I mentioned I have got
23 about 1,000 people now. Within that headquarters itself I
24 have got -- I just established my joint cyber cell within
25 the Command that is under my J3 operations directorate. We

1 have got an integrated planning element from Paul Nakasone,
2 CYBERCOM, embedded with us. And two of my five service
3 components are dual-hatted as not only Space Command but
4 also CYBERCOM. So that is kind of the structural piece.

5 Senator King: I would urge you to add to that
6 structure a red team. Ask Paul Nakasone to attack you and
7 see how it goes. Admiral Richard, I would make the same
8 suggestion.

9 Admiral Richard, in the view seconds I have left, a
10 major sort of strategic question. How would we respond,
11 under our current nuclear posture, to a Russian use of a
12 tactical nuclear weapon in Ukraine?

13 Admiral Richard: Senator, I would be happy to answer
14 that question in closed session.

15 Senator King: I thought that might be your answer, and
16 I will ask the question in closed session. Thank you.

17 Thank you, Mr. Chairman.

18 Senator Reed. Thank you, Senator King.

19 Senator Rounds, please.

20 Senator Rounds: Thank you, Mr. Chairman. And,
21 gentlemen, first of all let me begin by saying thank you for
22 your service to our country.

23 Admiral Richard, I would like a clarification if I
24 could with regard to Senator Gillibrand had asked a question
25 concerning command and control, and specifically command and

1 control between conventional weapon systems versus command
2 and control for nuclear weapon systems. And you mentioned
3 an overlay of the two with regard to JADC2. Could you
4 clarify a little bit the separation between the two that I
5 think we always try to keep, between command and control of
6 conventional versus nuclear weapon systems?

7 Admiral Richard: Senator, first, we do not always try
8 to keep separation between conventional and nuclear command
9 and control. You cannot. We never have and we will never
10 be able to achieve that. Strategic platforms are still
11 platforms. They have to interoperate with other platforms
12 to accomplish their mission, even for simple deconfliction
13 purposes. So one, we have to be able to tell an airplane
14 where the other airplanes are, even if they are not on a
15 similar mission. So you have to have some overlap to do
16 that.

17 Two, it is to our benefit, where appropriate, to use
18 our conventional command and control to add redundancy and
19 resiliency to our nuclear command and control. You could
20 not afford to build two completely separate systems if we
21 tried to achieve that in the real world.

22 The final piece, though, there is always a piece of
23 nuclear command and control that has to go to a higher
24 standard. Nuclear command and control has to be able to
25 withstand the worst threats that we can postulate against

1 it. Regular command and control does not, and that is why
2 we separate it out. We have always done that, and we are
3 going to do it to an appropriate degree going into the
4 future.

5 Senator Rounds: The reason for my question, with
6 regard to clarification, is that I know that we are very
7 sensitive to where other nations may try to impact our
8 ability to command and control our nuclear weapons systems.
9 We have the same concern about interacting with other
10 nations' command and control.

11 Can you talk a little bit about the clarification
12 between the two in terms of the interest in making sure that
13 others are not put on alert because it appears that we are
14 impacting theirs, and the same reason that we would have a
15 concern about them impacting our ability, and what that does
16 with regard to stability?

17 Admiral Richard: Senator, first I think it is
18 important that I say here -- and I would be happy to go into
19 a lot more detail in closed session -- the cause of, I would
20 call it apprehension and valid concern over the security of
21 our nuclear command and control, particularly the
22 cybersecurity, is our nation's nuclear command and control
23 has never been in a stronger, more protected, more resilient
24 lineup than it is today, based on some very good work
25 operationally done over the last 6 to 8 months, and I would

1 love to go into more detail as to why I say that.

2 As to your concerns about the strategic implications of
3 threatening another nation's nuclear command and control,
4 and vice versa, that is very well understood. That is very
5 well factored in as we think through the overall effects
6 that we are trying to achieve.

7 And I do want to put one more caution out in terms of,
8 we tend to use terms, at least back at STRATCOM, in
9 strategic stability. Our basic definitions of strategic
10 stability are probably out of date. They date back to the
11 Cold War. They are two-party dynamics pieces. They tend to
12 think of nuclear as the only major effect that has to be
13 considered. When you move this into a three-party problem
14 it is a completely different set of effects dynamics that I
15 think we need a lot of work to get into to understand how
16 that works.

17 Senator Rounds: Thank you, sir. General Dickinson, in
18 our ability to achieve and maintain a competitive edge in
19 space relies heavily on a rapid capability and development
20 in eliminating acquisition bottlenecks. Can you discuss how
21 you are partnering with commercial and interagency
22 organizations to expand our space capabilities at the pace
23 that we need them to be expanded, and what steps have you
24 taken to improve your acquisition process in order to
25 onboard new capabilities at a faster pace?

1 General Dickinson: So that has really been one of the
2 highlights with the Command over the last couple of years is
3 really the partnership we have with the commercial industry.
4 Two examples of that. One is the two main areas that we
5 work closest with the commercial partners right now, but we
6 are expanding that, is satellite communications and the
7 other one is space domain awareness. Satellite
8 communications capability with our commercial industry has
9 really been out at Vandenberg Space Force Base for years,
10 but has expanded. We have got 10 commercial partners right
11 now as part of our commercial integration cell out at
12 Vandenberg Space Force Base, and that is a great
13 relationship in terms of how do we expand our capabilities
14 and capacity in the satellite communications domain or
15 enterprise and how we do that.

16 The second one is space domain awareness, and really
17 that has been a rather new, about a year and a half or two
18 years old. We have got a cell in Colorado Springs that
19 works for my Joint Task Force Space Defense and a commercial
20 integration cell that really what it does is it provides to
21 us what commercial space domain awareness capabilities can
22 see around the world. So they are looking up, looking in
23 the space domain for us, telling us what they see, and we
24 utilize that in addition to what we are doing with our
25 exquisite sensors.

1 So the integration of those two enterprises, space
2 domain awareness and SATCOM, has been very, very powerful.
3 It is growing so much now that we have had to develop a new
4 commercial framework by which we can bring those partners on
5 board and expand it even more.

6 Senator Rounds: Thank you, sir. Thank you, Mr.
7 Chairman.

8 Chairman Reed: Thank you, Senator Rounds.

9 Senator Kaine, please.

10 Senator Kaine: Thank you to each of you for your
11 service, and Admiral Richard, let me begin with you. You
12 talked about how some of our defense concepts are a little
13 bit outdated in your realm because they were based upon kind
14 of a two-party dynamic and now we have to grapple with a
15 three-party dynamic. I think it is even more complicated
16 than that because two of the three parties are now
17 cooperating in ways that they had not.

18 I have often asked questions in this committee and in
19 the Foreign Relations Committee about growing cooperation
20 between Russia and China, and usually folks on your side of
21 the table tell me that I do not need to worry about it much
22 because there is so much historical animosity between Russia
23 and China that they are not likely to cooperate. I think we
24 are finding that actually not to be the case. Whatever the
25 past is, they are cooperating a lot more now.

1 So I would like you to each tell the committee in your
2 domain how are you planning to take into account the
3 increasing cooperation between Russia and China in either
4 the STRATCOM or SPACECOM areas?

5 Admiral Richard: Senator, first I would say I am not
6 going to tell you that I am not concerned about that. I am
7 very concerned about what opportunistic aggression looks
8 like. I am worried about what cooperative aggression looks
9 like. And so, one, this gets back to I have to deter all of
10 them, all of the time, which means every day we are thinking
11 about their decision calculus and what we have to do to
12 influence so that basically they say, "Not today."

13 And so right now you have to look at what is happening
14 in one place and then walk over and see what that does to
15 change decision calculus and change your messaging
16 potentially, change your posture, and that is just in the
17 opportunistic frame. And then do you have the plans ready
18 to understand what cooperative looks like? So we do that
19 every day, Senator.

20 Senator Kaine: Great. General Dickinson?

21 General Dickinson: Senator, we look at it each and
22 every day, just as Admiral Richard does, but in the space
23 domain we just have to look and see how much more capability
24 development that they have done just on orbit. We can go
25 back to November to look at the Nudol tests, and then as I

1 mentioned in my opening statements, the SJ-21, in
2 particular.

3 So just individually, the growth of their capabilities
4 on orbit is of concern. And then when you look at from the
5 civil perspective, the Chinese and the Russians have entered
6 into a lunar station agreement that they are going to build
7 a station on the moon. So it is not just the military that
8 we are looking at carefully. It is also kind of their civil
9 piece as well, by both those nations.

10 Senator Kaine: General Dickinson, you have segued into
11 my next question, the civil dimension. There has been news
12 recently that was sort of interesting news, kind of in a way
13 positive news. Elon Musk has been getting some press for
14 his role in providing ground stations and internet coverage
15 to Ukraine with the Starlink satellite connection. So that
16 is positive. Russia has been trying to jam the signals and
17 block coverage. That has made me wonder, hmm, there are
18 non-state actors in space too that can enter into contested
19 environments. Describe the legal framework for commercial
20 capability in space, and the SPACECOM war game scenarios
21 where private actors become involved in contested
22 situations.

23 General Dickinson: We do look at that, Senator, and
24 really, to begin with, I think what we are seeing with Elon
25 Musk and the Starlink capability he is providing is really

1 kind of showing us what a mega-constellation or proliferated
2 architecture can provide in terms of redundancy and
3 capability. But to your point, we work very closely in our
4 commercial integration cells with that very issue.

5 Senator Kaine: Admiral Richard, one last question for
6 you. I met last week with General Von Ovost of TRANSCOM,
7 and we talked about future tanker requirements. It is my
8 understanding that the airborne tankers that support the
9 bomber leg of the triad have a varying degree of EMP,
10 electromagnetic pulse hardening, to include the KC-46. So
11 talk to us about STRATCOM's role in shaping requirements for
12 future tanker programs to ensure that EMP hardening is part
13 of the DNA.

14 Admiral Richard: Senator, you hit on a key point, as I
15 am one of the customers of the tanker fleet, and in that I
16 have certain requirements, EMP protection, electromagnetic
17 pulse, being one of those. So one is to clearly articulate
18 the requirements. Two is go see what we can do in terms of
19 employment of our force to reduce that demand signal. A
20 great example I would point to, and I would give credit to
21 the Air Force, is the re-engining of the B-52s. The engines
22 on those date back to the '60s and they burn a lot of gas.
23 Re-engine, less fuel required, less tanker demand. And then
24 what other efficiencies can we achieve while still
25 maintaining the flexibility and the signaling capability of

1 the air leg, which is one of its prized attributes.

2 Senator Kaine: Thank you. I appreciate. Thank you,
3 Mr. Chair.

4 Chairman Reed: Thank you, Senator Kaine.

5 Since a quorum is present I would now ask the committee
6 to consider the following civilian nominations: the
7 Honorable Robert P. Storch to be Inspector General of the
8 Department of Defense, Dr. Lester Martinez Lopez to be
9 Assistant Secretary of Defense for Health Affairs, Mr.
10 Christopher J. Lowman to be Assistant Secretary of Defense
11 for Sustainment, Mr. Peter Beshar to be General Counsel,
12 Department of the Air Force, the Honorable Frank R. Parker
13 to be Assistant Secretary of the Navy for Manpower and
14 Reserve Affairs, Dr. Agnes G. Schaefer to be Assistant
15 Secretary of the Army for Manpower and Reserve Affairs, and
16 Mr. Frank Calvelli to be Assistant Secretary of the Air
17 Force for Space Acquisition.

18 We have reviewed these nominations with Senator Inhofe
19 and he concurs. Is there a motion to favorably report these
20 seven nominations to the Senate?

21 Senator Wicker: So moved.

22 Chairman Reed: Is there a second?

23 [Multiple seconds.]

24 Chairman Reed: All those in favor, say aye.

25 [Chorus of ayes.]

1 Chairman Reed: The motion carries. Thank you very
2 much.

3 And now let me recognize Senator Tillis, please.

4 Senator Tillis: Thank you, Mr. Chairman. Gentlemen,
5 thank you for being here and for your service.

6 Admiral Richard, have you recognized any tangible
7 operational changes resulting from Putin's announcement that
8 they need to increase nuclear readiness, and have you seen
9 any posture changes on the part of Russia or the PRC with
10 respect to that?

11 Admiral Richard: Senator, I would like to go into
12 detail in answer to that question inside the closed session,
13 but if you will allow me to make a broader point that I
14 think relates.

15 The scenarios that we are seeing right now, potential
16 escalation, limited unclear use in a conventional aggression
17 scenario, STRATCOM has been preparing for this for years,
18 along with other combatant commands. General Dickinson's
19 command has been doing that. And so we have rewritten
20 deterrence dynamics theory over the years. We have new
21 analysis that we are using. We got criticized for that. We
22 got told that it was highly improbable or somehow self-
23 serving for us to think our way through this, but we ignored
24 that such that to this point nothing has happened that we
25 did not anticipate, we had not thought about, and had not

1 prepared for.

2 Senator Tillis: Thank you for that. With Belarus
3 indicating their willingness to have nuclear assets deployed
4 within their territory, how does that rethink our forward-
5 deployed capabilities in Europe?

6 Admiral Richard: Senator, again I respect your
7 indulgence to allow me to answer that in closed session.

8 Senator Tillis: Thank you. General Dickinson, I want
9 to talk a little bit about end strength. I think you are
10 somewhere around 45 percent of goal, augmented by Reserves,
11 civilians, and Guard, but you are relatively new. So what
12 is right timeline to get up to the desired end strength, and
13 what kind of strategies are you putting together to make
14 sure that we get there?

15 General Dickinson: Yeah, thank you for the question,
16 Senator. You are correct. We are at 45, 50 percent
17 strength with an augmentation of contractors that get us
18 over, like I said in my opening statement, to about 1,000.
19 So our strategy, quite frankly, is to get to the end
20 strength as quickly as I can. We have worked with the
21 Department very carefully in terms of how do we bring
22 manpower from certain fiscal years back to the left so that
23 I can be at a reasonable strength here in a couple of years.

24 But that is where we are going, and what we are trying
25 to do right now is attract that talent that we need in the

1 command, and that is both a balance between civilian as well
2 as military. And the civilian force that I have is
3 Department of the Air Force civilians, and we are working
4 very closely right now in how to attract them. We have got
5 some programs out there in terms of internship programs, to
6 bring young adults into the command with STEM technical type
7 of degrees.

8 And I have been very pleased with the military presence
9 that we have had within the commands from all the services.
10 The two biggest services that I have represented in the
11 command right now is, quite frankly, as you would expect,
12 the Space Force and the Army. And so bringing them into a
13 joint command, building them to full operational capability,
14 utilizing exercises, and, quite frankly, real-world
15 operations. So we have had a couple of events over the last
16 couple three years, if you will, that have really driven us
17 to be very proficient in what we do.

18 I will just take the Nudol event, for example, back in
19 November. That, for us, when I declared initial operational
20 capability last August, was a direct result of having that
21 talent and expertise within the command, rehearsed through
22 processes and procedures and techniques that the joint world
23 knows and recognizes, to the point where we can actually
24 provide a strategic effect for our national-level leaders.
25 That is really the strategy going forward. And right now we

1 have got an initial operational capability which means we
2 can provide those effects, but we are building out the
3 capacity within the command so that I can do that more
4 robustly.

5 Senator Tillis: Do you have sufficient authorities to
6 be able to get to where you need to be with end strength or
7 resources?

8 General Dickinson: I do. I have the right authorities
9 right now.

10 Senator Tillis: Admiral Richard, just really quickly,
11 with advances, particularly with respect to China and
12 hypersonics and other capabilities, is our current strategy
13 mapping up against their emerging threats, or do we need to
14 rethink maybe how we counter threats 10 years, 20 years from
15 now, differently?

16 Admiral Richard: Senator, I am conscious of the fact
17 that the Nuclear Posture Review and national defense
18 strategies have not been promulgated, but I am confident
19 that we are going to have a good strategy. The question is
20 going to be capability, capacity, and posture, and to
21 acknowledge those will not be static and we are going to
22 have to think through those much more frequently than we
23 have needed to in the past because of the very threats you
24 are referring to.

25 Senator Tillis: Thank you. Thank you, Mr. Chair.

1 Chairman Reed: Thank you, Senator Tillis.

2 Senator Kelly, please.

3 Senator Kelly: Thank you, Mr. Chairman. Admiral
4 Richard -- and good morning to you both. Thank you for
5 being here, Admiral and General. Admiral Richard, we have
6 all been following reports of Russian attacks on Ukrainian
7 nuclear plants and other very concerning developments in
8 this conflict, and Russia is now targeting civilians,
9 probably out of frustration. This should be -- you know, I
10 think is viewed as escalatory. It is clearly a war crime.

11 I am concerned about further escalation, and I
12 understand the U.S. military has established a hotline or
13 direct communication channel with the Russian military,
14 particularly because Russia media and cyber actors have
15 sought to spread disinformation, making reliable information
16 hard to assess in real time. It is my view that this direct
17 military-to-military communication is critical to avoid
18 misunderstandings that could lead to a dangerous military
19 escalation between two nuclear powers.

20 As this committee knows well, in a crisis decision
21 time, time to respond to a nuclear threat is only a matter
22 of minutes. Admiral Richard, I understand the hotline will
23 be run out of U.S. European Command. Can you elaborate on
24 how STRATCOM will remain in the communication loop of this
25 hotline?

1 Admiral Richard: Senator, a couple of points if I
2 could. Actually, you do not have to respond to threats,
3 nuclear or otherwise, in minutes. In fact, I am not allowed
4 to put the President in the position that he only has -- or
5 her -- minutes to respond. So I want to make sure everybody
6 understands, this nation always has the time to make a fully
7 informed decision on any action that it takes.

8 Second, for strategic purposes, we have long had
9 hotlines between the United States and Russia. They date
10 back to the Cold War. They are still there, they are tested
11 every day, and those are still available to us. We are a
12 long way from needing to use anything like that right now.
13 And I will go into more detail on the rest of your questions
14 in closed session, sir.

15 Senator Kelly: All right. Thank you.

16 General Dickinson, we are currently seeing reports of
17 commercial satellite systems, you know, very effectively
18 being used, you know, information for the Ukrainians, also
19 for us, and these satellite systems are likely to be of
20 interest to Russia too and how should they ultimately
21 counter them in the context of this invasion. And Russia's
22 and China's anti-satellite capabilities have received a lot
23 of attention in years with a couple of anti-satellite tests,
24 one before one of my space shuttle launches in around 2008.

25 But I want to spend a little time today discussing

1 Iranian and North Korean anti-satellite capabilities that
2 tend to get less airtime, especially North Korea, who
3 obviously has an intercontinental ballistic missile
4 capability. Iran hopes to develop one. One concern is that
5 ICBMs can be used to create a debris cloud in low-Earth
6 orbit, and that could impact U.S. satellites.

7 General Dickinson, can you expand on how U.S. Space
8 Command is viewing both the North Korean and the Iran
9 capabilities, and how do you assess their willingness to
10 target and impact U.S. satellites in space?

11 General Dickinson: Thank you, Senator. First of all I
12 would just say that you identify a big problem, if you will,
13 within the space domain. We just saw it a couple of months
14 ago when the Russians destroyed -- they had conducted their
15 Nudol test that left about 1,500 pieces of debris in low-
16 Earth orbit that, quite frankly, we are tracking every day
17 now and we will continue to track that for years to come.

18 To your example, back before your flight, when the
19 Chinese did that test, we still track objects today from
20 that very test that, quite frankly -- and sir, you are an
21 expert on this -- could be threatening to the International
22 Space Station. And we do a lot of work each and every day
23 very closely with NASA to make sure that we look at that and
24 make sure that the astronauts on the International Space
25 Station are safe.

1 With regard to both Iran and North Korea, I would like
2 to expand on that, if I could, in the closed session.

3 Senator Kelly: All right. Thank you, and I yield back
4 the remainder of my time.

5 Chairman Reed: Thank you, Senator Kelly.

6 Senator Blackburn, please.

7 Senator Blackburn: Thank you, Mr. Chairman, and to
8 each of you I thank you for your service and thank you for
9 being here today with our questions.

10 Admiral Richard, I do want to come to you first. I
11 fully understand that there are sensitive matters that
12 affect our government and STRATCOM, and we all understand
13 that many times public comment is not appropriate or
14 productive. However, we have to keep in mind that silence
15 is also a message, and a very strong one, and you have been
16 an excellent, outspoken commander of STRATCOM, and you have
17 been a wonderful advocate in the public venue for why we
18 need to modernize our nuclear forces. And I think you have
19 been the commander we need at the time that we need him, and
20 we thank you for that.

21 So I am disappointed by the lack of clarity on answers
22 that you have today, and many of these are appropriate in an
23 unclassified sphere, and I was disappointed in the weekend's
24 cancellation of the Minuteman-III test, because we only have
25 four of those a year, and I was disappointed to learn that

1 STRATCOM has put out a schedule of tests to consider others
2 for cancellation.

3 And I appreciate -- I think we all do -- that you have
4 to be careful, especially at a time like this, because of
5 the message that our actions could send to Moscow. But this
6 message of silence coupled with inaction, in my opinion,
7 does not project one of strength. It is not a message of
8 deterrence. And I would probably venture to guess in your
9 opinion, your professional opinion, it would question the
10 judgment of such actions.

11 We have to be ready to respond to any threat, any
12 place, any time, and I think that we are facing two nuclear-
13 capable adversaries at this point. So let us say speaking
14 hypothetically, entirely hypothetically, what message does
15 cancellation of a prescheduled, routine test send to our
16 adversaries?

17 Admiral Richard: Senator, let me offer first that the
18 test has been rescheduled, not cancelled, and it will be
19 important for us to go do that test. I want to acknowledge
20 up front that is an Air Force service weapons test. It is
21 done under their authorities.

22 But it is very important to me, and to the Air Force.
23 That is a 50-year-old rocket that we are talking about, and
24 as it ages, our ability to understand its performance is
25 very important both for my operational planning as well as

1 the effort the Air Force has to have to sustain it until we
2 can get a replacement system.

3 My fundamental recommendation is that we maintain our
4 normal set of operations. Day-to-day we very carefully
5 craft a series of operations, activities, and other
6 evolutions that are designed to show our readiness, it is
7 designed to maintain that readiness, and it is designed to
8 give us confidence in our forces. And so, in general, that
9 is my recommendation under these conditions.

10 Senator Blackburn: Okay. Then let me take it this way
11 with you. Then what impact does delay or reduction in
12 funding, how does that affect the modernization and the
13 implementation efforts that you need?

14 Admiral Richard: Ma'am, any delay or interruption in
15 funding is one of the most corrosive things that we can do
16 in order to enable those programs to stay on schedule such
17 that we do not have a diminishment in the capabilities
18 required to execute our strategy. So not only does it have
19 a practical effect in terms of potential delays and the
20 dates that we can have these systems, it is also a signal of
21 a lack of will on our part, fundamentally to defend
22 ourselves.

23 Senator Blackburn: So you would see that as
24 diminishing and not improving our abilities, capabilities?

25 Admiral Richard: Yes, ma'am.

1 Senator Blackburn: Okay. General Dickinson, I do have
2 some questions for you but I am running out of time. I am
3 going to send these to you for answer, because I want to
4 explore a little bit more the commercial opportunities that
5 you have and how we can build off of some of the commercial
6 advancements that are going to affect the space and your
7 command.

8 So thank you, Mr. Chairman.

9 Chairman Reed: Thank you, Senator Blackburn.

10 Senator Warren, please.

11 Senator Warren: Thank you, Mr. Chairman, and thank you
12 Admiral Richard and General Dickinson for being here.

13 So Admiral Richard, last year you testified before this
14 committee that you hope the nuclear policy review would
15 include looking at the wide array of capabilities we have in
16 our arsenal, including space and cyber. In other words, our
17 ability to deter adversaries is not only about nuclear
18 weapons that we have, it is also about conventional weapons
19 and other areas of strength. And it sounds like the
20 adoption of integrated deterrence that will be part of this
21 review does precisely that.

22 Was Strategic Command fully consulted and able to fully
23 participate in the Nuclear Posture Review process?

24 Admiral Richard: Senator, first I want to endorse the
25 idea of integrated deterrence, that STRATCOM and previous

1 commanders have been calling for this, the idea that you use
2 every available instrument, beyond the military, to best
3 deter your opponent and resolve political issues at the
4 lowest possible level of violence. So we are strongly in
5 support of that.

6 Second is to understand, though, that nuclear
7 deterrence, in particular, is a part of integrated
8 deterrence. They are not different things. In fact, if you
9 do not have the nuclear piece inside of it the rest of
10 integrated deterrence does not work because your opponent
11 might be able to --

12 Senator Warren: Excuse me for interrupting, Admiral.
13 I understand this. I am just asking a question about
14 process. Was Strategic Command fully consulted and able to
15 fully participate in the Nuclear Posture Review process?

16 Admiral Richard: STRATCOM was fully involved in the
17 Nuclear Posture Review process up through the Secretary of
18 Defense. I had plenty of opportunity to tell the Secretary
19 personally. We led portions of the Nuclear Posture Review.
20 But beyond that, ma'am, I do not know.

21 Senator Warren: Okay. Now as we discussed last year,
22 the nation's nuclear policy is up to the President and the
23 Secretary, and the goal of the Nuclear Posture Review is to
24 rigorously examine options to determine the proper role for
25 nuclear weapons in our national security strategy. So,

1 Admiral Richard, do you agree that the Nuclear Posture
2 Review benefits -- let me put it this way, from hearing a
3 wide variety of views to make sure that we are developing
4 the smartest possible policy?

5 Admiral Richard: Senator, yes, and my responsibility
6 inside that is to offer the operational implications to each
7 of those wide range of views.

8 Senator Warren: Okay. And do you think our nuclear
9 policy should be informed by objective technical analysis?

10 Admiral Richard: Ma'am, we provide a lot of that
11 objective technical analysis.

12 Senator Warren: So you think it should be informed by
13 technical analysis and a broad variety of views. We are in
14 agreement on that.

15 Admiral Richard: Yes, ma'am.

16 Senator Warren: Good. You know, I am looking forward
17 to reviewing the Nuclear Posture Review when it is released,
18 but the reason I am focused on this is because I have
19 concerns about the process that produced it. Over the past
20 year, the Pentagon has repeatedly pushed out and obstructed
21 efforts to have more rigorous debates and analysis to
22 support this review, and I just want to give one example of
23 this.

24 The ground-based strategic deterrent is a \$264 billion
25 program. I requested that DoD contract with a respected

1 group of outside experts to determine the technical
2 feasibility of extending the Minuteman-III program instead
3 of just buying expensive new weapons. I was then told that
4 the DoD did not have the contract authority to do so, and
5 that is just simply not true. It appears DoD simply did not
6 want to do a study that might show that a massively
7 expensive nuclear spending program was not actually
8 necessary.

9 Now my view on this is no secret. We must reduce the
10 role of nuclear weapons in our defense strategy. It is
11 dangerous and it results in a staggering amount of spending,
12 more than \$630 billion over the next decade. But no matter
13 what you believe about these weapons, our nuclear policy
14 should be developed by asking tough questions, not
15 formulated in an echo chamber.

16 So thank you very much, Mr. Chairman.

17 Admiral Richard: Senator, can I suggest that I look
18 forward to the Nuclear Posture Review being published so you
19 can see exactly how and what it concluded. But I will add,
20 thank goodness we have ICBMs right now. I will explain more
21 in closed testimony.

22 Senator Warren: So I am glad that you are looking
23 forward to seeing the report. As I said, I am as well. But
24 my whole point is that if we do not have a process that
25 includes alternative points of view, a widespread point of

1 view, then the product that comes from it is too likely to
2 come from an echo chamber instead of being fully informed,
3 and that is what troubles me.

4 Admiral Richard: Yes, ma'am.

5 Chairman Reed: Thank you, Senator Warren.

6 Senator Ernst, please.

7 Senator Ernst: Thank you, Mr. Chair, and thank you,
8 gentlemen, very much for being here today.

9 Unfortunately, Russia's unprovoked invasion of Ukraine
10 has really reminded us of the threat that is posed by our
11 adversaries and threat to our own international stability.
12 We certainly cannot take peace for granted, so again, thank
13 you very much for your service to our nation.

14 If we could go back a little bit, you know, I
15 understand some of the discussion that is here, but if you
16 could again, Admiral Richard, just please reiterate why we
17 cannot extend the life of the Minuteman-III.

18 Admiral Richard: Senator, there are a couple of
19 reasons and there is one that I probably have not emphasized
20 enough in my previous testimony. Any of our deterrence
21 systems have to be able to operate in the threat environment
22 that they face. Fundamentally, they have to be able to pace
23 the threat. Minuteman-III, because it has been extended so
24 long, has basically no margin left to be able to pace
25 improvements in other nations' defensive systems. That is

1 on top of the cost benefit that we would achieve by changing
2 to a new system, modern, well-designed, lower operating
3 cost.

4 But I want to come back to, for any of these weapons
5 systems, with Minuteman-III being the best example, it has
6 to be able to pace the threat in order for it to deter
7 anybody.

8 Senator Ernst: And pacing that threat but then also
9 safety implications as well. You mentioned that the
10 Minuteman-III is 50 years old, but certainly there are ways
11 that we can modernize and not only impact safety
12 implications going forward but also workforce implications.
13 Maybe could you speak a little bit to that as we are going
14 through modernization efforts and how we would be able to,
15 as well, keep pace with the technology necessary to upgrade
16 and modernize?

17 Admiral Richard: Senator, a common issue here is, it
18 is not just about modernizing a rocket. It is the entire
19 weapon system. So a key attribute the GBSD will bring is a
20 much-improved nuclear command and control system for that
21 particular piece. That alone is another significant reason
22 that we have to go do that.

23 You mentioned workforce. The GBSD -- and I will defer
24 to the Air Force for the specifics -- GBSD requires a lot
25 less number of people to operate it because it has modern

1 methods of maintenance and sustainment. Remember,
2 Minuteman-III was not designed to be modernized at all. The
3 Air Force did heroics to reverse-engineer the ability to do
4 that on a weapon system only designed to be in service for
5 10 years. So there are a number of these benefits the
6 nation will achieve if we modernization the intercontinental
7 ballistic missiles.

8 Senator Ernst: I appreciate that. And you have also
9 spoken to the fact that not having a stable appropriation,
10 stable budget, how that has impacted negatively the
11 modernization effort. So I just wanted to reemphasize that,
12 that we really need to do our work as Congress and make sure
13 that we get back into regular order.

14 So, Admiral, what is your assessment of the capability
15 and ability of our domestic supply and production chains to
16 produce our nuclear cores?

17 Admiral Richard: Senator, one, it would be best for me
18 to defer the specifics of an answer to that to the people
19 that actually buy this stuff. That is the services and the
20 agencies. But bottom line is that is a very big concern
21 that we have let, across the board, our industrial base
22 atrophy, and we will need to take steps to restore
23 capability and capacity in any number of areas -- weapons
24 complex, nuclear command and control, delivery systems --
25 such that we have a robust, resilient defense industrial

1 base that is able to produce the capabilities that
2 commanders like I will have to use to defend us.

3 Senator Ernst: And just in the remaining time, I
4 really appreciate that, the need to really modernize out
5 there. I know there are a number of different opinions on
6 this committee as we come to nuclear strategic deterrence,
7 but the fact that we should have regular order in the way we
8 do appropriations so that we can continue to modernize, if
9 that is the directive that comes from this committee and
10 from the Administration. But then also the workforce that
11 goes with that as well. I think there are a lot of issues
12 that comes to this discussion today. We are just very
13 grateful to have you there and working on these issues with
14 us.

15 So with that I will yield back. Thank you.

16 Chairman Reed: Thank you very much, Senator Ernst.

17 Senator Shaheen, please.

18 Senator Shaheen: Thank you, Mr. Chairman, and Admiral
19 Richard, General Dickinson, thank you both for your
20 testimony this morning.

21 General Dickinson, I want to follow up on the
22 conversation that has come up in several questions around
23 the proliferation of debris in space. It is my
24 understanding that the current collision screening
25 notification criteria were developed over a decade ago. Is

1 there an effort underway now to update that criteria, and
2 who is in charge of that, and when do you expect that to
3 happen?

4 General Dickinson: Thank you for the question. Just
5 to the, right up front, if I could just talk about the size
6 of the debris and how much that is growing, just to give you
7 a statistic or a feel for that. Back in 2019, when the
8 Command stood up, we tracked on a daily basis about 25,000
9 objects in space. Today, in 2022, it is almost 44,000. So
10 we have seen, obviously, a tremendous growth in things that
11 we have to track each and every day around the globe. And
12 really, you know, we have seen, with the Nudol test, for
13 example, back in November, how that can expand quite
14 quickly.

15 So the process that we use today to do that is done out
16 at Vandenberg Space Force Base by the 18th Space Control
17 Identification Unit out there. And the algorithms and the
18 C2 that they use has been upgraded. And so we look at that
19 each and every day in terms of how we are able to identify
20 and work with NASA to make sure that we are able to identify
21 potential issues with the International Space Station and
22 its safety.

23 Senator Shaheen: But you are looking only at the
24 International Space Station?

25 General Dickinson: No. Ma'am, we are looking at all

1 the debris up there in terms of being able to provide that
2 information out. That is just one area that I highlight,
3 because it has such visibility on it.

4 Senator Shaheen: And am I correct that there is
5 specific collision screening and notification criteria that
6 you are looking at?

7 General Dickinson: Yes, ma'am. So there is, and we
8 work very closely with not only NASA but we also work very
9 closely with our commercial partners as well. We have
10 agreements with over 100 companies right now, what we call a
11 space situational awareness agreement, and that agreement
12 allows us to share that information with them. So for
13 example, if you are a commercial company that has satellites
14 on orbit, we will let you know, or we will let them know if
15 there is an issue that we project with potential debris.

16 Senator Shaheen: Well, I guess what I am trying to
17 figure out is this criterion that is updated on a regular
18 basis, do you all do that? Does somebody else do that? How
19 are other companies and other countries notified about that?

20 General Dickinson: So we do that. That is on a
21 website that we have that is called spacetrack.org, where
22 that unit at Vandenberg Space Force Base updates that
23 routinely with information that we have that we are
24 gathering from our sensors and through our analysis process.

25 Senator Shaheen: Okay. I want to switch to a more

1 mundane topic, because I certainly share the urgency with
2 which both of you talked about the challenges we are facing
3 from both China and Russia. And we have had a number of
4 conversations on this committee about whether our decision-
5 making process should be more efficient, should we address
6 procurement. How do we address what we are seeing happening
7 in China and Russia with respect to their increasing
8 military capability, although we may want to raise questions
9 about Russia after Ukraine?

10 But I raise this in the context of the proposed
11 relocation of SPACECOM headquarters from Colorado to
12 Alabama, because I am puzzled, given the urgency, given the
13 challenges of setting up this new command of the fact that
14 you are still only in about 50 percent capacity in terms of
15 the staffing that you need, why we are going to spend
16 several years now trying to move SPACECOM to a new location
17 that is going to take us, as I understand, a year and a half
18 before we actually even know whether Redstone is potentially
19 an appropriate location because of environmental concerns.
20 Are we reassessing that decision? And my understanding also
21 is that it will take us until 2026 to actually move SPACECOM
22 to that location, if the assessment proves to be that that
23 is an appropriate location.

24 So help me understand why given all of our urgency and
25 all of the decisions that we need to make we are going to

1 spend the money and the time to relocate Space Command to a
2 totally different place?

3 General Dickinson: So, ma'am, Senator, there are two
4 long-going efforts. I am sure you are probably aware the
5 DoD IG is conducting their evaluation along with the GAO.
6 Both of those are moving along, and I am looking forward to
7 the completion of those two efforts.

8 For me, it is not necessarily about the location. It
9 is about the decision. So, in other words, I need a
10 decision as soon as I can possibly get one so that I can
11 build to full operational capability as quickly as possible.

12 We do have competitors that are moving very quickly.
13 Those competitors are not necessarily waiting for me to
14 reach FOC, or full operational capability. So I need a
15 decision, and based on that decision I will do whatever I
16 need to do to make sure that I can achieve my mission.

17 Senator Shaheen: Okay. I am out of time but I just
18 want to follow up one point on that. If you were going to
19 stay in your current location, do you have any sense of how
20 long it would take to settle in to do any renovations that
21 you need to do there versus moving to a new location in
22 Alabama, and how long that would take and the cost of that?

23 General Dickinson: So we are in the process right now
24 of building the infrastructure that we need to do the
25 mission that I have been given today, and we are moving in

1 that direction. I would say we are a couple three years
2 away from full operational capability.

3 Senator Shaheen: Wherever you are located.

4 General Dickinson: Wherever I am located.

5 Senator Shaheen: And is that based on the number of
6 personnel you have to hire?

7 General Dickinson: It is based on many things,
8 Senator. One is personnel. The other has to do with
9 expertise within the command, attracting the right expertise
10 within the command, and making sure that I have trained
11 those processes and procedures within the command to be able
12 to do the entire mission set that I have been given.

13 Senator Shaheen: Thank you.

14 Chairman Reed: Thank you, Senator Shaheen.

15 Senator Fischer, please.

16 Senator Fischer: Thank you, Mr. Chairman. Thank you,
17 Admiral and General, for being here today.

18 One of the reasons we have never adopted a no-first-use
19 policy or made a sole purpose declaration is the real threat
20 of a strategic non-nuclear attack. President Obama's 2010
21 Nuclear Posture Review states the following: "There remains
22 a narrow range of contingencies in which U.S. nuclear
23 weapons may still play a role in deterring a convention or
24 CBW attack against the United States or its allies and
25 partners. The United States is therefore not prepared at

1 the present time to adopt a universal policy that deterring
2 nuclear attack is the sole purpose of nuclear weapons."

3 Admiral Richard, chemical and biological threats are
4 sometimes treated as an afterthought. How has the risk of
5 major non-nuclear attack changed since 2010, and has it
6 decreased?

7 Admiral Richard: Senator, first it has certainly not
8 decreased. You are correct that often gets overlooked, at
9 least in public discourse. I will tell you, as a part of
10 the Nuclear Posture Review that was looked at very closely,
11 and I look forward to the publishing of the Nuclear Posture
12 Review to show you what the result of that analysis was.

13 Senator Fischer: Thank you. Also, those who favor
14 reducing the size of our nuclear forces often argue that
15 non-nuclear capabilities such as space and cyber
16 capabilities can be substituted for nuclear weapons without
17 diminishing our ability to credibly hold targets at risk,
18 deter adversaries, and assure our allies. What are your
19 views on this idea?

20 Admiral Richard: Senator, what I would offer is, one,
21 I applaud efforts -- that is fundamentally you are getting
22 after some of the capabilities that are used inside
23 integrated deterrence, and we applaud that effort.

24 But I need to be clear about something here, which is
25 there is no other capability or combination of capabilities

1 that gets anywhere close to the demonstrated destructive
2 potential of a nuclear weapon. That is why it is integral
3 to integrated deterrence. And then with that foundation,
4 with that backstop, you then use every other capability in
5 our disposal to deter the opponent.

6 An important point here, Senator, if I could. When we
7 are talking about issues between nuclear-capable great
8 powers, it quickly becomes less about an order of battle
9 comparison and who wins the fight and quickly becomes more
10 about who judges greater stake and who is willing to take
11 greater risks to get it. Integrated deterrence sets us up
12 very well to resolve issues like that.

13 Senator Fischer: And our threats are only increasing.
14 We have already brought up that we have two peer
15 competitors when it comes to the threats that we face now.
16 How do you think we can get that message across to the
17 people of this country so that they have a more complete
18 understanding of the threats we face and what we must do to
19 protect this homeland and also to offer assurances to our
20 allies?

21 Admiral Richard: Senator, I would offer that our
22 opponents' actions are speaking to us much better than
23 anything I can say in words. I think it is important for us
24 to understand we do not know how far China is going to go,
25 and Russia is also expanding. But also we are seeing

1 demonstrations of how you can use these capabilities
2 coercively.

3 We are so trained in thinking that all we do is deter.
4 I do not think that we fully understand or have thought
5 about, in a long time, what the coercive use of these
6 capabilities looks like, and we are getting real-world
7 demonstrations of that right now.

8 Senator Fischer: Administration, you quote China's
9 strategic breakout in your opening statement and you note
10 that, quote, "The PRC likely intends to have at least 1,000
11 warheads by 2030, greatly exceeding previous DoD estimates."
12 As concerning as that is, it only captures, I think, part of
13 the problem.

14 I know there is not a lot you can say in this
15 environment, but do you believe it is wise to assume that
16 China's nuclear forces will stop expanding when they reach
17 that point?

18 Admiral Richard: Senator, I will tell you, I told my
19 staff that whatever the time estimate that the intelligence
20 community gives you on anything from China, divide it by 2
21 and maybe by 4 and you will get closer to the right answer.
22 So no, I do not know that we have any idea of what the end
23 point and/or speed. When I first testified here we were
24 questioning whether or not China would be able to double
25 that stockpile by the end of the decade. They are actually

1 very close to doing it on my watch, and I think we need to
2 factor that into our calculations as we think through what
3 we need to defend ourselves.

4 Senator Fischer: And as we look at China's breakout,
5 or we look at the continued growth of Russia's non-strategic
6 arsenal, obviously nuclear threats are still growing. We
7 are not trying to match any adversary system for system, but
8 at the same time, an imbalance in forces does undermine our
9 strategic stability. Isn't that right?

10 Admiral Richard: Yes, ma'am, and said another way I
11 think it emboldens coercion and aggression.

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

13 Chairman Reed: Thank you, Senator Fischer.

14 Senator Rosen, please.

15 Senator Rosen: Thank you, Chairman Reed, for holding
16 this important hearing. I would also like to thank Admiral
17 Richard and General Dickinson for testifying today and for
18 your service to our country. Thank you.

19 I want to return now to the major role that Nevada
20 plays in the capabilities and safety of our nuclear arsenal,
21 specifically at the Nevada National Security Site, because
22 we need some infrastructure upgrades in order to continue to
23 complete and do our mission.

24 And so, Admiral Richard, since 1993, the Nevada
25 National Security Site, or we call it NNSS, has overseen the

1 nuclear Stockpile Stewardship Program, principally at the
2 Ula facility. It is an underground laboratory where
3 scientists conduct those subcritical experiments to verify
4 the reliability and effectiveness of our nuclear stockpile.
5 This is the only facility in the country where this is done,
6 and Ula is undergoing major construction projects that will
7 soon host our most capable weapons radiographic system in
8 the world. Of course, I have visited NNSA a few times. I
9 am very proud of it, that it contributes to the
10 certification of our nuclear stockpile.

11 However, the NNSA faces several challenges as we have
12 seen and you have testified to, to its modernization
13 programs, including significant infrastructure delays which
14 you note in your testimony dates back to the Manhattan
15 Project era. And the Nevada National Security Site is no
16 exception. Unfortunately, Chairman Reed, the Nevada
17 National Security Site is larger than all NSA sites combined
18 and is the equivalent to the size of the state of Rhode
19 Island, I might add.

20 Chairman Reed: Thank you.

21 Senator Rosen: So we have a vast amount of
22 infrastructure to build and maintain.

23 So Admiral Richard, can you please speak to how
24 upgrades to the Stockpile Stewardship Program like the Ula
25 affect STRATCOM's certification of our nuclear stockpile,

1 and how do these delays impact your ability to fulfill your
2 responsibilities?

3 Admiral Richard: Senator, first I would put the
4 Stockpile Stewardship Program on the list of things that
5 make me proud to be an American that we actually figured out
6 how to do that such that we relieved ourselves of the need
7 to actually conduct nuclear weapons testing.

8 But what I think is important to understand is that
9 alone will not give us the confidence that we have to have
10 in our weapons. That is what this fundamentally comes back
11 to. Are you confident in your stockpile and your deterrent
12 because that underpins credibility which is needed to deter?

13 There are two other things we have to do in addition to
14 the good work in the Stockpile Stewardship Program. One of
15 them is you have to have a flexible and modern stockpile,
16 which means we need to move past life extensions, which we
17 have been doing for 30 years, and move into refurbishments,
18 which is where NNSA is about to go. And the second one goes
19 back to the infrastructure you are talking about. You have
20 to have a modern, responsive, and resilient infrastructure,
21 and we have delayed too long, in my opinion, giving NNSA the
22 resources necessary to do that piece. All three of those
23 are necessary for us to have the confidence we need to
24 conduct my mission.

25 Senator Rosen: Thank you. Speaking of mission, we

1 have cyber mission and space, and cyber, I could talk all
2 about workforce, the workforce challenges that we have with
3 developing that. Senator Ernst brought that up. But as we
4 see what is happening particularly in the Ukraine, are you
5 concerned, General Dickinson that the increasing threats of
6 cyberattack from Russia could jeopardize our U.S. space
7 operations? Maybe you cannot speak of it here. We will
8 talk later about space cyber aggression as the war in
9 Ukraine continues to go forward.

10 General Dickinson: Well, thank you, and I will provide
11 more in the closed session. But I will say here, this
12 morning, is just to echo what Admiral Richard said in terms
13 of posture at this particular point. I support Admiral
14 Richard in a lot of things that he does in terms of his
15 nuclear command and control, and I am very satisfied in the
16 posture that we have today with respect to space as well as
17 cyber. We have taken a lot of effort to ensure that we are
18 cyber hardened and that we have got the right types of
19 experts looking at our systems, our vital space systems.
20 But I can provide more to you in the closed session.

21 Senator Rosen: Thank you. I appreciate that. I know
22 my time is almost up. I do want to talk about workforce
23 development. I have been lucky enough to have a Junior ROTC
24 STEM bill passed, which means our youngest kids, kids in
25 high school, they have a track for joining Junior ROTC to

1 put them into STEM professions in the military. It is
2 really important. We will talk later about developing that
3 workforce. I will submit them for the record. But we
4 really need to up our game there as well, to be nimble and
5 modernize.

6 Thank you. Thank you, Mr. Chairman.

7 Chairman Reed: Thank you, Senator Rosen.

8 Senator Cramer, please.

9 Senator Cramer: Thank you, Mr. Chairman, and thanks to
10 both of you for your service and for being here. Admiral
11 Richard, let me just say as others have said, one of your
12 strongest qualities, since I have known you anyway, has been
13 your forthrightness and your clarity. But I have to say, in
14 the moment that we are in right now, I have especially
15 appreciated your boldness and clarity. We need to hear it.

16 The people we work for need to hear it.

17 I also have to compliment you on your composure, being
18 able to sit through some of this. The suggestion that there
19 has not been enough variables or enough varying opinions to
20 commit \$630 billion over 10 years to the most important
21 deterrence to aggression in the world is frightening enough,
22 but it is galling in the context that around here some
23 people think nothing of spending trillions of dollars over
24 the course of 10 months or 10 weeks or even 10 days, based
25 on the opinion of one person at HHS. And I will leave it at

1 that. So congratulations on having composure as well.

2 I do want to get back to an issue that Senator
3 Blackburn raised with regard to the postponement of that
4 ICBM watch. As you can imagine, those of us in North Dakota
5 pay close attention to those things. I appreciate your
6 answer, particularly your commitment that it is only a
7 postponement, that it is now rescheduled. Did you agree
8 with postponing that, if I might ask?

9 General Dickinson: Senator, I had an opportunity to
10 directly advise the Secretary of Defense, among others. I
11 think it would be best if I left that advice private between
12 him and I.

13 Senator Cramer: I understand and I appreciate that,
14 because it seems to me that reality is now clashing with
15 some people's fantasies. And I appreciate you raising the
16 reality of the moment. You said it well a little bit ago
17 when you said opponents' actions are speaking as loudly as
18 anything that we could probably say.

19 General, I want to talk a little bit about -- I want to
20 bring it home a little bit as well. You, of course, are
21 very familiar. You and I visited the very old PARCS radar
22 station, the Cavalier Radar Station, now the Cavalier Space
23 Force Station, it seems like last month but I think it was
24 probably a year or two ago. As you know, we had this very
25 important early warning system designed to, of course, warn

1 us early in case something is coming over the Arctic. Now,
2 of course, it has been monitoring space as well. You have
3 talked about the need for decision superiority. That was, I
4 think, something you referenced or talked quite a bit about
5 over the last couple of years.

6 I am just wondering if the PARCS array at Cavalier
7 Space Station that relies on this very old technology, if
8 there is modernization opportunities for our decision
9 superiority as well that we should be talking about.

10 General Dickinson: Senator, thank you, and I did enjoy
11 my trip up there. I think it was over a year ago, maybe 2
12 years ago now. But certainly that particular sensor, and
13 all of those early warning radars, are very critical to our
14 overall architecture, to be able to provide that missile
15 warning, missile defense, and space domain awareness. So
16 critical to provide that very decision space to our
17 national-level leaders.

18 So in terms of what that capability is today, we
19 continue to look at that through a lifecycle management, and
20 really I work very closely with the Space Force, because
21 they are ultimately in charge of those upgrades and the
22 modernization of those assets. What I do is identify
23 whether or not we have a gap or a requirement that would
24 need that. So we are working very closely with them and we
25 are looking at the entire architecture, not just necessarily

1 one asset. Because as we look to the future, it will not
2 only be a terrestrial-based type of capability that is up
3 there right now but we will look at a space capability too,
4 that augments that, so we have a layered warning capability
5 globally.

6 Senator Cramer: I think, Admiral, you had mentioned
7 earlier, maybe both of you have talked about, throughout
8 this hearing, the delay or interruption in funding of
9 modernization, what that means, the kind of signal that that
10 sends, the practical, functional consequences of that.

11 Let me ask this. If we were, in this place, able to
12 get our act together, if we were able to have enough
13 consensus and realization that modernization is not just
14 important but critical, and if we were to have the political
15 will, would it even be possible to not only not delay but
16 even accelerate any part of modernization if we were able to
17 make that case?

18 Admiral Richard: Senator, I would defer to the
19 services to give you the specifics of that. But I think you
20 are hitting at, we need to ask questions differently. We
21 used to ask what is it going to take, and we have gotten
22 into the habit of saying how are we going to mitigate our
23 assumed delay or failure. We used to ask the question the
24 other way around. That is how we got to the moon by 1969.
25 We need to get back to understanding the operational risk is

1 on par with programmatic and technical risk, reverse the way
2 we ask questions, and get back to producing capabilities to
3 way we used to.

4 Senator Cramer: I appreciate it. Thank you both.
5 Thank you, Mr. Chairman.

6 Chairman Reed: Thank you, Senator Cramer.

7 Let me recognize Senator Tuberville for the purpose of
8 a unanimous consent request.

9 Senator Tuberville: Oh, thank you very much. Just
10 really quickly, you know, I would like to correct for the
11 record the remarks of my colleague from New Hampshire, and I
12 appreciate General Dickinson being a bipartisan approach
13 here on the movement of Space Command from Vandenberg to
14 Redstone Arsenal in Alabama.

15 The recently released draft environmental study found,
16 quote, "significant impact on socioeconomic conditions and
17 environmental justice," end quote, at Vandenberg. By
18 contrast, the study found no significant environmental
19 concerns at Redstone.

20 So, Mr. Chairman, I would just like to submit this
21 study to you for the record and correct that as we go along.

22 Chairman Reed: Without objection.

23 [The information follows:]

24 [COMMITTEE INSERT]

25

1 Senator Tuberville: Thank you.

2 Chairman Reed: Thank you, Senator Tuberville.

3 Senator Peters, please.

4 Senator Peters: Thank you, Mr. Chairman, and
5 gentlemen, thank you for being here today, for your
6 testimony, and thank you for your service.

7 General Dickinson, your posture statement provided a
8 very detailed account of the significant progress that
9 SPACECOM has made with some partners and allies all over the
10 world. The illegal and unjust Russian invasion of Ukraine
11 has certainly renewed NATO's sense of purpose. I think we
12 would all agree on that. It is very encouraging to see, and
13 it has driven some of our key allies to make some sorely
14 needed changes, I think, in their security posture.

15 My question for you, sir, is with this increased
16 appetite for defense cooperation around the free world, what
17 should we be doing in the coming years to expand on this
18 even more in the space domain?

19 General Dickinson: Thank you. That is one of the
20 highlights in the Command, I think, over the last 2, 2 1/2
21 years, is our ability to work with our allies and partners.
22 It has really, quite frankly, exploded in terms of our
23 partners coming to the table and wanting to be part of the
24 efforts that we are working around the world. An example is
25 our Combined Space Operations group that we have called

1 CSpOC, just signed a vision statement that came out a couple
2 of weeks ago. But that is an example of the growing, if you
3 will, the expansion of our partnership.

4 Just as an example, there are three different countries
5 right now that have actually stood up their own version of
6 U.S. Space Command. So the enterprise itself is growing,
7 and the willingness to work is just like we have seen in
8 other domains, for example, so air, land, and sea. But they
9 are really coming and we are working closely together, and
10 it is probably, when you look at our integrated deterrence
11 strategy, one of the pillars of that is being able to
12 leverage our allies and partners in not only situations we
13 are seeing today but ones that we do each and every day.

14 Senator Peters: Great. Great. General Dickinson, as
15 you know, on March 3rd, Russia stated that they will hold
16 delivery of the RD-180 engines that are used by some U.S.
17 defense industries as part of the Atlas V launch system.
18 And while it certainly appears that this development will
19 not significantly hinder any launching operations, I think
20 it certainly underscores the importance of supply chain
21 integrity. Semiconductors, for example, are a known
22 liability all across the many domains.

23 So my question for you, sir, is are there additional
24 space-specific material or technologies supplied by either
25 Russia or China that could result in degraded military

1 readiness, if withheld?

2 General Dickinson: Not that I am aware of.

3 Senator Peters: Great. Admiral Richard, you indicated
4 in your posture statement that while STRATCOM academic
5 alliance is an excellent asset, with over 70 academic and
6 industrial partners, quote, "It is only a fraction of what
7 is needed to reinvigorate research and analysis for
8 deterrence concepts," end of quote.

9 My question for you, sir, is what additional ways can
10 we leverage the power of American and allied defense
11 industry and academia to maintain our strategic edge?

12 Admiral Richard: Senator, first, beyond the academic
13 alliance what we did at STRATCOM was put together an
14 analytic agenda. What are the key questions that we need
15 research done on -- three-party deterrence dynamics would be
16 an excellent example of that -- so that we can harness the
17 power of the Department of Defense, and the nation more
18 broadly? Think your UARCs, your FFRDCs, other places where
19 we can do that.

20 But even that, this is bigger than one combatant
21 command. I think this is a broader Department of Defense or
22 national issue. I am reminded, this nation invented the
23 entire Rand Corporation to do not much more than think
24 through deterrence back in the Cold War. We face an even
25 bigger problem. I think it is going to need an equivalent

1 national-level response.

2 Senator Peters: Great. Great. Well, I agree.

3 Admiral Richard, you outlined how establishment of the Joint
4 EMS Operation Center will facilitate joint electromagnetic
5 spectrum operations throughout the Department of Defense and
6 combatant commands. But as the electromagnetic spectrum is
7 just as vital in terms of homeland security, how do you see
8 the Joint EMS Operation Center working with non-DoD agencies
9 as well?

10 Admiral Richard: Senator, first, I applaud where my
11 Department is going in understanding the importance of
12 electromagnetic spectrum and the fact that we cannot take it
13 for granted anymore. It is a contested, congested space.
14 And there is an EMS superiority strategy that our Secretary
15 just signed out. We are responsible for a piece of it. You
16 are hitting on that. We are the operational proponent, and
17 so first we work to make sure that the standards and
18 certification inside the Department in our forces are
19 sufficient. We are moving out on that. We provide support,
20 and we are doing that right now, in electromagnetic spectrum
21 operations.

22 But fundamentally what I do is come back in and provide
23 the operational consequence of programmatic decisions.
24 Those changes those decisions to our benefit.

25 Senator Peters: Great. Thank you. Thank you, Mr.

1 Chairman.

2 Chairman Reed: Thank you, Senator Peters.

3 Senator Scott, please.

4 Senator Scott: Thank you, Chairman. First of all I
5 want to thank both of you for your clarity and for your
6 commitment to the freedoms of this country.

7 So Admiral Richard, as we all know we are in a position
8 where we have to deter two nuclear-armed, great power
9 adversaries, Russia and China. First off, based on the
10 funding you received and based on how the Congress has been
11 acting since you have had this job, do you feel comfortable
12 that Congress has your back that we are going to provide you
13 the resources that you are going to be able to deter both
14 Russia and Communist China?

15 Admiral Richard: Senator, first, I would applaud my
16 Department because over the course of my tour we are now
17 able to say, and I expect this in the next budget, but the
18 last one was one of the first ones we could say not only was
19 the strategic deterrent forces fully funded, so was the
20 nuclear command and control, which are the two pieces inside
21 the Department of Defense. We are going to need to continue
22 to do that. And additionally, Senator, continue to ask
23 ourselves the question, what additional capability,
24 capacity, and posture might we need to do?

25 So yes, I think Congress, as you said, "has my back" if

1 we would pass a budget. The budgets are adequate. We just
2 need them enacted.

3 Senator Scott: So right now do you think we have
4 enough capability to prevent Russia and Communist China from
5 intimidating us and our allies?

6 Admiral Richard: Sir, my forces are ready right now to
7 do anything the President asks us to do.

8 Senator Scott: Admiral Richard, you have been watching
9 Putin's statements, and you might not be able to answer all
10 these questions, about his potential use of nuclear weapons.
11 So I have got a couple of questions. The first one is, have
12 you seen any tangible operational changes following Putin's
13 order to increase the readiness of his nuclear forces?

14 Admiral Richard: Senator, I would like to answer that
15 question in closed session, but I will say we have been
16 thinking through this class of problem for years.

17 Senator Scott: Second, given your experience of
18 observing foreign leaders, which would be part of your job,
19 in your personal opinion do you believe America and our
20 allies, especially other nuclear powers, should treat
21 Putin's words and actions as a legitimate indication that he
22 is crazy enough and willing to employ nuclear weapons of any
23 kind?

24 Admiral Richard: Senator, I will go into more detail
25 in the closed session, but I would look to his previous

1 actions to give us a clue as to what his future ones might
2 be.

3 Senator Scott: I see. The things that he said outside
4 his nuclear capability, has he basically followed through?

5 Admiral Richard: Senator, again, I would prefer to
6 answer that in closed session.

7 Senator Scott: Thank you. General Dickinson, is the
8 U.S. fully treating our outer space as a warfighting domain,
9 and are we developing systems consistent with that policy to
10 combat and be able to defeat Russia and Communist China in
11 their space capabilities?

12 General Dickinson: We certainly have seen some
13 activity by both Russia and China over the last few years,
14 going back to 2007 and 2008, when the Chinese destroyed a
15 satellite on orbit, and then just as recently as November,
16 with the Russian Nudol event that occurred. So we can see,
17 at least from our competitor standpoint, they are, in fact,
18 doing testing and development in that domain.

19 Senator Scott: It seems like there are people who are
20 trying to talk about we ought to cooperate with these
21 adversaries, but don't they need to know that we are going
22 to deter and defeat them in space and we have to be willing
23 to do everything we can to be able to beat them?

24 General Dickinson: Well, I think, Senator, that each
25 and every day that we are operating in space we are doing

1 that very thing in terms of deterrence.

2 Senator Scott: Do you feel like you have been given
3 the resources to be able to do that?

4 General Dickinson: I have the resources that I need to
5 perform my mission today.

6 Senator Scott: So I believe that Communist China and
7 Russia plan to use outer space against us. So what is your
8 biggest concern about their plans, and what do we need to do
9 that we are not doing?

10 General Dickinson: Well, it is fundamental, Senator,
11 back to my opening statement when I said in order to be able
12 to articulate what is happening I have got to have exquisite
13 domain awareness, exquisite domain awareness. I need to be
14 able to tell you what I see in the space domain, in terms of
15 space domain awareness, as a critical function of that to be
16 able to interpret what is happening so that I can make
17 recommendations and take actions that I need to.

18 Senator Scott: General Dickinson, I know that Space
19 Force was recently created, but do you feel like you have
20 had sufficient progress toward integrating these
21 capabilities all across the Pentagon?

22 General Dickinson: Senator that is a great question.
23 Our relationship with the Space Force is as you would expect
24 it to be. We have got a very close relationship with
25 General Raymond and his team in terms of being the service

1 that provides most of my capability to the combatant
2 command. We are also working with the other services
3 because they, in fact, have capabilities that I can use in
4 the space domain as well.

5 So it is really not just the relationship and
6 integration with Space Force. It is across the Department
7 to each one of the services.

8 Senator Scott: Thank you. Thank you, Chairman Reed.

9 Chairman Reed: Thank you, Senator Scott.

10 Senator Cotton, please.

11 Senator Cotton: Admiral Richard, last fall, and again
12 today in your opening statement, you referred to a Chinese
13 breakout -- "breakout" was your term -- of nuclear weapons
14 and capabilities. Could you please explain a little bit
15 more, just in plain English? I am not sure a normal
16 American watching would understand what a "breakout" means.
17 Explain a little more in plain English what you mean and its
18 implications for our security.

19 Admiral Richard: Senator, so first that is not a
20 talking point. I formally informed the Secretary of Defense
21 of that fact last year. There are two components that I can
22 talk about here. I would be happy to go into more detail in
23 closed session.

24 First is it signals a significant shift in their
25 capability and fundamentally their strategy. China has long

1 been in a minimum deterrence posture, which was consistent
2 with their stated no-first-use policy. They now have
3 significantly more capability than is necessary to execute a
4 minimum deterrence strategy, and enables them now to execute
5 any plausible nuclear employment strategy.

6 Second is on our side. It drove me to have to take
7 operational actions in response to a dramatic change in the
8 threat, and I will go into more detail as to what those were
9 in closed session.

10 Senator Cotton: So despite their so-called no-first-
11 use policy, they are building a nuclear arsenal capable of
12 executing a first strike.

13 Admiral Richard: One, Senator, they have plenty of
14 capability that have no role in a true minimum deterrence
15 strategy, and, in fact, there is no technical difference
16 between a system that is designed to go first or to go
17 second. There are attributes that enable that, but we need
18 to be very conscious of what they could do with it, not what
19 they say they are going to do with it.

20 Senator Cotton: So I think we should focus on what
21 they are spending and what they are building than rather on
22 what they are saying, because they could change their no-
23 first-use policy like that, could they not?

24 Admiral Richard: Senator, yes, and I put no more
25 credence in that than I did in the Soviet Union's no-first-

1 use policy.

2 Senator Cotton: All right, Admiral. Earlier this
3 year, media reports suggested that the Biden administration
4 wanted to cut two nuclear systems from America's arsenal.
5 These were so-called non-strategic nuclear weapons, weapons
6 with smaller explosive yields, designed often to be used
7 against military formations. Is this reporting accurate?
8 Were there discussions to cut the Whiskey 76-2 and the sea-
9 launched cruise missile, also known as the SLCM?

10 Admiral Richard: Senator, all the capabilities in our
11 deterrence portfolio were examined inside the Nuclear
12 Posture Review. Those are included in that, and I look
13 forward to the results of the NPR to see what the decisions
14 were.

15 Senator Cotton: When is the NPR going to be released?

16 Admiral Richard: Senator, I would have to defer you to
17 OSD for that answer. But I do want to make a point about
18 those capabilities in particular, which is every capability
19 that is in the U.S. arsenal is therefore a reason. It is
20 designed to produce an effect against an assessed threat.
21 If we do not have a capability, the threat that drove it to
22 be there still exists. And so we either as a nation have to
23 choose to take the risk that we can achieve that effect or
24 we have to go find another way to go do that, and that is
25 something we are going to continue to have to do, even after

1 we finish the Nuclear Posture Review. I can give you more
2 details, sir, in closed session.

3 Senator Cotton: Thank you. I agree with that, and I
4 agree that we are, to a degree, self-detering while we are
5 letting Russia run wild on non-strategic nuclear weapons,
6 yet we are considering cutting our own.

7 I want to turn to the cancelled test in recent days.
8 Admiral, it is correct that we have routinely conducted
9 unarmed tests for our Minutemen-III missiles and that we
10 give Russia advance notice to those tests. Correct?

11 Admiral Richard: Senator, that is correct, for a long
12 time.

13 Senator Cotton: And they are routine. They are
14 scheduled well in advance. Correct?

15 Admiral Richard: Yes, they are, sir.

16 Senator Cotton: We cancelled one of those in the last
17 week. Correct?

18 Admiral Richard: Senator, we rescheduled it.

19 Senator Cotton: So let me ask you this. These tests
20 are a critical part of keeping our nuclear deterrent healthy
21 and viable. Right?

22 Admiral Richard: Senator that is a 50-year-old weapon
23 we are talking about. I need those tests, and actually I
24 want to acknowledge they are Air Force tests, for us to
25 maintain confidence in the reliability.

1 Senator Cotton: And so you can say we rescheduled it,
2 but there is a detailed and longstanding testing schedule.
3 So what we really did was cancel it. Did we cancel that
4 test because we did not want to, quote/unquote, "escalate
5 with Russia"?

6 Admiral Richard: Senator, we are trying very hard not
7 to send any escalatory signals at this point. My
8 recommendation, in general, has been to maintain our
9 routine, normal, scheduled operations. I think we are all
10 very familiar, and that is the best posture for us to be in.
11 We very carefully think through those to maintain our
12 readiness and to maintain our training, and demonstrate
13 that. So my recommendation overall is that we maintain that
14 cadence.

15 Senator Cotton: I am glad you recommended that. Do
16 you know who, above your rank, decided not to accept that
17 recommendation of this test?

18 Admiral Richard: Senator, I would like --

19 Senator Cotton: Was it the Secretary or --

20 Admiral Richard: -- to maintain private my specific
21 recommendations in this case.

22 Senator Cotton: Okay. I will just say that there is
23 nothing escalatory about longstanding, long-scheduled,
24 routine tests that Russia knows about in advance, and it is
25 just another example of how we have mistaken actions that

1 would have de-escalated this situation rather than escalated
2 it. This is not within your combatant command, but if we
3 had been sending all the missiles to Ukraine over the last
4 five months that we had been sending on an emergency basis
5 for the last two weeks, I know that some people fear that
6 that might cause Vladimir Putin to invade Ukraine, but how
7 foolish does that look now? And I think it also is a bad
8 signal not to continue our routine nuclear testing.

9 Chairman Reed: Thank you, Senator Cotton.

10 Senator Hawley, please.

11 Senator Hawley: Thank you, Mr. Chairman. Thank you,
12 gentlemen, both for being here. Thank you for your service
13 as always. Admiral, if I could start with you, just a basic
14 question here. You were just testifying to Senator Cotton.
15 China is a nuclear power, right?

16 Admiral Richard: A near-peer.

17 Senator Hawley: Russia is a nuclear power.

18 Admiral Richard: Yes, sir.

19 Senator Hawley: You were just amplifying to Senator
20 Cotton your testimony about China being in the midst of a
21 strategic breakout. We see Vladimir Putin making now
22 explicit nuclear threats. Is this a good time to weaken our
23 own nuclear deterrent?

24 Admiral Richard: Senator, recapitalization of what we
25 have today is the absolutely minimum that we need to do, and

1 we are going to need to further ask ourselves if any else in
2 posture capability and capacity is warranted based on change
3 in threat and what we are learning out of crisis deterrence
4 dynamics right now.

5 Senator Hawley: Absolutely minimum, you testified. I
6 think that is very important. Am I right in thinking that
7 our nuclear forces remain the bedrock of our strategic
8 deterrent?

9 Admiral Richard: Not only our strategic deterrent,
10 Senator, but it is integral and foundational to integrated
11 deterrence.

12 Senator Hawley: Including our ability to project power
13 and to manage escalation beneath the nuclear threshold.
14 That is what you are talking about, I think.

15 Admiral Richard: Senator, no other plan or no other
16 capability in the Department of Defense is going to work if
17 I cannot maintain strategic and nuclear deterrence.

18 Senator Hawley: Very good. Let me ask your about
19 something you wrote in your testimony. You said
20 prioritizing the crucial NNSA infrastructure modernization
21 programs is the best and only option to pace projected
22 threats and sustain strategic deterrence. We have got, in
23 my state, in the state of Missouri, we have got the Kansas
24 City National Security Campus which supports the nuclear
25 deterrent. We are very proud of that.

1 Can you explain why it is important for us to fully
2 fund NNSA infrastructure modernization?

3 Admiral Richard: Senator, we have reached the point
4 where we can no longer deter with the leftovers of the Cold
5 War. We have life-extended them to the maximum extent
6 possible. We must now start to recapitalize, remanufacture
7 those. That requires a very robust infrastructure. We are
8 10 years behind the point where we needed to start
9 recapitalizing the infrastructure, and that is NNSA and
10 actually the rest of the complex. And the consequence is we
11 simply will not have the capabilities that we are going to
12 have to have to deter the threat environment we are in.

13 Senator Hawley: Very good. Thank you for that. You
14 told me -- switching back to China, Admiral, you said during
15 an appearance before this committee in 2019, to me, that
16 China had the capabilities required to threaten or to
17 actually use nuclear strikes to compel the United States to
18 surrender in a potential war over Taiwan. We know that
19 since then China has continued, and you just testified to
20 this, China has continued to develop its nuclear forces in
21 theater, and Chinese strategists are showing interest in
22 changing their doctrine and also in the need for lower-yield
23 nuclear weapons in order to increase the deterrence value of
24 China's force.

25 Is it fair to say that China's ability to engage in

1 limited nuclear employment at the theater level is growing?

2 Admiral Richard: Senator, not only yes, if you will
3 ask me that in closed session I will give you a very vivid
4 example of what that could do to us.

5 Senator Hawley: Very good. If you could just explain
6 for us, why are limited nuclear options like, for instance,
7 the supplemental capabilities endorsed by the 2018 Nuclear
8 Posture Review, why are those so important for deterring
9 China or, for that matter, any other adversary that wants to
10 use non-strategic nuclear weapons to coerce us?

11 Admiral Richard: Limited nuclear use is deterred
12 differently than the way you deter the classic large attack,
13 and it is designed to make sure that the opponent does not
14 think that there is some threshold below which they could
15 use the nuclear effect, leaving us with a disproportionate
16 response that ultimately winds up self-deterring us.

17 Senator Hawley: Very good. General, let me switch to
18 you, just in the time I have remaining here. Thomas
19 Shugart, an analyst, and others have shown that the PLA is
20 preparing to engage in a large-scale, pre-emptive strike
21 operation at the outside, or would be prepared to engage at
22 the outset of any conflict over Taiwan that we may find
23 ourselves in, in an attempt to cripple our ability to
24 project power in the Western Pacific.

25 It seems to me we have got to assume Beijing may be

1 incentivized to strike pre-emptively in space as well, which
2 brings me to my question. What are the most important
3 things that Congress can do this year to support SPACECOM's
4 efforts to bolster the resilience of our architecture in
5 space over the next 5 years?

6 General Dickinson: Thank you, Senator. So it boils
7 down to, and Admiral Richard touched on it, is that
8 predictable funding. So when I look at the size of the
9 enterprise and the requirements and capabilities that we
10 need, it all boils down to having a consistent stream of
11 funding that will allow the Space Force and the other
12 services to provide the capabilities that I will need.

13 Senator Hawley: Very good. My time has expired.
14 Gentlemen, thank you both again for your testimony. Thank
15 you for your service to this country.

16 Thank you, Mr. Chairman.

17 Chairman Reed: Thank you, Admiral. Thank you,
18 General. The open portion of this hearing will adjourn, and
19 we will reconvene in SVC-217, in approximately 15 minutes,
20 and that would be 11:50 by my watch, roughly.

21 This portion is adjourned.

22 [Whereupon, at 11:36 a.m., the hearing was adjourned.]

23

24

25

WORD INDEX

< \$ >

\$264 56:24

\$630 57:12 74:20

< 1 >

1,000 11:16 33:23 45:18
69:10

1,500 50:15

1/2 17:17 18:9 79:20

10 12:13 28:1 38:10

47:14 60:5 74:20, 24
94:8

100 12:13 63:10

11:36 96:22

11:50 96:20

15 96:19

150,000 7:16

18,000 11:6

18th 62:16

1960 4:25

1969 77:24

1993 70:24

< 2 >

2 12:16 13:1 17:17 18:9
69:20 76:11 79:20

20 47:14

2007 85:14

2008 49:24 85:14

2010 66:20 67:5

2016 12:24 30:11

2018 95:7

2019 2:15 27:20 33:16

62:7 94:15

2021 2:20 8:3 12:11, 18

2022 1:6 62:9

2023 1:4

2026 64:21

2030 15:21 69:11

25,000 62:8

27 12:12

< 3 >

30 22:5 72:17

3rd 80:15

< 4 >

4 69:21

44,000 62:9

45 45:10, 16

< 5 >

5 96:5

50 45:16 59:10 64:14

500 12:14

50-year-old 52:23 90:22

< 6 >

6 36:25

60s 9:2 42:22

< 7 >

70 81:5

70s 9:2

76-2 89:8

< 8 >

8 1:6 36:25

80 15:20

80s 8:25 9:1

< 9 >

9:30 1:12

90s 8:25

< A >

a.m 1:12 96:22

abilities 53:24

ability 2:12 25:14 28:10

36:8, 15 37:18 52:24

54:17 60:3, 15 67:17

72:1 79:21 93:12 94:25

95:23

able 8:5 24:25 25:5

32:22 35:10, 13, 24 47:6

54:22 55:11, 14 58:21, 22,

24 59:6, 14 61:1 62:19,

20 63:1 66:11 69:24

74:18 76:14 77:11, 12, 16

80:11 83:13, 17 84:9

85:10, 23 86:3, 11, 14, 16

ABMS 18:13

aboard 4:17

absolute 21:25 29:4

Absolutely 27:14 92:25

93:5

academia 81:11

academic 81:4, 5, 12

accelerate 21:21 77:16

accept 91:16

access 20:8

accomplish 35:12

accomplishing 13:25

account 28:22 40:2 79:8

accurate 89:7

accurately 4:7

achieve 8:20 35:10, 21

37:6, 18 42:24 59:1 60:6

65:16 89:23

acknowledge 12:5 47:21

52:19 90:24

acquisition 25:10, 18

37:20, 24 43:17

act 77:12

acted 3:23

acting 83:11

action 13:21 49:7

actions 52:5, 10 68:22

75:17 84:21 85:1 86:17

88:7 91:25

active 15:23

active-duty 11:18

actively 13:3

activities 14:1 53:5

activity 12:22 13:6 85:13

actors 41:18, 21 48:14

actual 22:11

add 17:25 19:8 31:16

33:17 34:5 35:18 57:19

71:19

addition 5:4 18:5, 6

38:24 72:13

additional 29:5 32:19

80:23 81:9 83:23

additionally 83:22

address 64:5, 6

addressed 2:19 15:25

adequate 84:1

adjourn 96:18

adjourned 96:21, 22

adjust 3:17

Administration 5:5 15:7

61:10 69:8 89:3

Admiral 2:5, 7 4:22 6:5

7:1, 3 9:12 10:1 15:2, 12

16:10, 18 17:9 19:15, 18,

21 20:3, 24, 25 21:17, 23

22:22 23:2 26:4, 12

28:16, 23 29:20 30:20

34:7, 9, 13, 23 35:7 36:17

39:11 40:5, 22 42:5, 14

44:6, 11 45:6 47:10, 16

48:3, 5, 22 49:1 51:10

52:17 53:14, 25 54:12, 13,

24 55:12, 16 56:1, 5, 10,

15 57:17 58:4, 16, 18

59:17 60:14, 17 61:18

66:17 67:3, 7, 20 68:21

69:18 70:10, 16, 24 71:23

72:3 73:12, 13 74:10

77:6, 18 81:3, 12 82:3, 10

83:7, 15 84:6, 8, 14, 24

85:5 87:11, 19 88:13, 24

89:2, 10, 16 90:8, 11, 15,

18, 22 91:6, 18, 20 92:13,

16, 18, 24 93:9, 15 94:3,

14 95:2, 11 96:7, 17

adopt 67:1

adopted 66:18

adoption 54:20

adults 46:6

advance 90:10, 14 91:24

advancements 54:6

advances 47:11

advantage 26:22

advantages 13:18

adversaries 8:6 23:7

28:18 52:13, 16 54:17

58:11 67:18 83:9 85:21

adversary 33:6 70:7 95:9

advice 28:20 75:11

advise 75:10

advocate 51:17

Aegis 17:22 19:4

Affairs 43:9, 14, 15

affect 51:12 53:12 54:6

71:25

afford 32:3 35:20

afloat 17:22

afterthought 67:4

age 4:25

agencies 15:13 25:22

60:20 82:8

agency 13:16

agenda 81:14

ages 52:24

aggression 13:2 17:6

40:7, 8 44:16 70:11 73:8

74:21

aggressive 8:17

Agnes 43:14

ago 12:13 50:14 61:25

75:16, 24 76:11, 12 80:2

agree 56:1 75:7 79:12

82:2 90:3, 4

agreement 41:6 56:14

63:11

agreements 20:4 23:16

25:17 63:10

Air 18:13 26:1 42:21

43:1, 12, 16 46:3 52:20,

22 53:1 59:24 60:3 80:8

90:24

airborne 42:8

air-launched 8:25

airmen 7:16 14:15

airplane 35:13

airplanes 35:14

airtime 50:2

Alabama 64:12 65:22

78:14

alert 36:13

algorithms 62:17

alliance 81:5, 13

allied 12:1 13:12 81:10

allies 3:18 8:16 11:21

13:8 14:4 16:15, 24 17:5

23:8 24:16 66:24 67:18

68:20 79:9, 13, 21 80:12

84:5, 20

allow 44:13 45:7 96:11

allowed 49:3

allows 63:12

altering 5:2

alternative 57:25

America 32:4 84:19

American 72:5 81:10
87:16
Americans 20:14 21:6, 7
32:2
America's 89:4
amount 57:11 71:21
amplifying 92:19
analysis 44:21 56:9, 11,
13, 21 63:24 67:12 81:7
analyst 95:19
analytic 81:14
analyze 13:14
and/or 69:23
animosity 39:22
announcement 44:7
answer 16:1 20:12 23:5,
6 28:25 30:19 32:10, 25
34:13, 15 44:12 45:7
54:3 60:18 69:21 75:6
84:9, 14 85:6 89:17
answers 51:21
anticipate 5:14 44:25
anti-satellite 12:16 49:22,
23 50:1
anybody 59:7
anybody's 33:2
anymore 82:13
anyway 74:12
appearance 94:15
appearing 5:11
appears 36:13 57:5
80:18
appetite 79:16
applaud 67:21, 23 82:10
83:15
applied 29:15
appreciate 43:2 52:3
60:8 61:4 73:21 75:5, 13,
15 78:4, 12
appreciated 74:15
apprehension 36:20
approach 11:15 78:12
appropriate 19:22 35:17
36:3 51:13, 22 64:19, 23
appropriation 60:9
appropriations 61:8
approximately 11:6 96:19
April 8:4
architecture 13:20, 22
26:6 42:2 76:14, 25 96:4
Arctic 76:1
area 63:2
areas 14:5 38:4 40:4
54:19 60:23
argue 67:14
Armed 1:9 3:8 11:4
24:19
arms 23:17
Army 43:15 46:12
array 54:15 76:6

arsenal 21:15 54:16
70:6, 20 78:14 88:11
89:4, 19
articulate 42:17 86:12
artificial 26:10
ascent 13:5
Ashore 17:22
asked 2:14 22:14, 20, 21
34:24 39:18
asking 22:3 55:13 57:14
asks 84:7
assess 48:16 50:9
assessed 89:20
assessment 15:2 16:14
21:1 60:14 64:22
asset 77:1 81:5
assets 12:11 13:8 18:6,
23 19:11 31:24 32:23
33:13 45:3 76:22
assigned 11:17, 22
assist 17:6 31:25
Assistant 43:9, 10, 13, 14,
16
associated 4:21
assume 69:15 95:25
assumed 77:23
assumption 8:11
assurance 17:1, 5, 7 23:10
assurances 68:19
assure 7:15 14:13 67:18
astounding 20:20
astronauts 50:24
Atlas 80:17
atrophy 60:22
attack 4:9 24:19 30:19
33:5 34:6 66:20, 24 67:2,
5 95:12
attacks 48:6
attempt 95:23
attention 49:23 75:5
attract 45:25 46:4
attracting 14:7 66:9
attribute 14:1 59:19
attributes 43:1 88:17
augmentation 32:22
45:17
augmented 45:10
augments 77:4
August 46:20
Austin 7:11
authoritative 18:19
authorities 47:5, 8 52:21
authority 57:4
AUTHORIZATION 1:3
available 18:19 20:9
30:9, 12 49:11 55:2
avoid 19:23 48:17
aware 65:4 81:2
awareness 4:13 13:13
17:19 25:6 30:4 38:7, 16,

21 39:2 63:11 76:15
86:13, 15
aye 43:24
eyes 43:25

< B >
B-52s 42:21
back 5:7 9:4 15:22
19:10 24:1 30:11 37:8,
10 40:9, 25 42:22 45:22
46:18 49:10 50:18 51:3
58:14 59:4 60:13 61:15
62:7, 13 71:14 72:10, 19
75:2 77:25 78:2 81:24
82:22 83:12, 25 85:14
86:11 94:14
backbone 13:24 18:21
backstop 68:4
bad 92:7
balance 46:1
ballistic 9:1 50:3 60:7
barring 23:16
base 24:7 38:9, 12 60:21
61:1 62:16 63:22
based 15:13 29:6 36:24
39:13 65:15 66:5, 7
74:24 83:9, 10 93:2
basic 37:9 92:13
basically 40:12 58:24
85:4
basis 62:8 63:18 92:4
battle 68:8
bear 18:3
beat 85:23
becoming 4:13
bedrock 3:6 93:7
began 4:23
beginning 28:3 31:9
33:18
behalf 14:14 21:14
behavior 2:24 8:17 13:3
24:3, 12, 15, 24 25:7
Beijing 95:25
Beijing's 3:14
Belarus 45:2
believe 22:23 23:7, 8
57:13 69:15 84:19 86:6
beneath 93:13
benefit 35:17 59:1 82:24
benefits 56:2 60:5
Beshar 43:11
best 21:9 28:20 55:2
59:5 60:17 75:11 91:10
93:21
better 2:23 4:12 16:9
25:24 30:2, 5, 6 68:22
beyond 55:2, 20 81:12
Biden 89:3
big 32:20 50:12 60:20
bigger 81:20, 25

biggest 46:10 86:8
bill 73:24
billion 56:24 57:12 74:20
biological 67:3
bipartisan 78:12
bit 15:9 32:8 35:4
36:11 39:13 45:9 54:4
58:14 59:13 75:16, 19, 20
76:4 87:14
Blackburn 1:18 51:6, 7
53:10, 23 54:1, 9 75:3
block 41:17
blocking 33:13
Blumenthal 1:16
BMD 17:22 19:4
board 39:5 60:21
boils 96:6, 10
boldness 74:15
bolster 96:4
bomber 9:2 42:9
bombers 30:24
border 3:25
bottlenecks 37:20
bottom 60:20
breakout 8:2 69:9 70:4
87:13, 16 92:21
breathtaking 8:3
briefing 6:2
bring 39:4 45:21 46:6
59:19 75:20
bringing 18:6 46:12
brings 12:12 96:2
broad 56:13
broader 13:19, 22 44:13
81:21
broadly 81:18
brought 18:2 68:14 73:3
budget 16:2 25:12 60:10
83:17 84:1
budgets 84:1
build 35:20 41:6 54:5
65:11 71:22
Building 1:13 3:24
11:12, 13 14:8 25:24
46:13 47:2 65:24 88:11,
21
builds 12:24
built 8:25 9:1, 2 33:18,
20
burden 18:16
burn 42:22
buy 15:22 60:19
buying 57:3

< C >
C2 62:18
cadence 91:14
calculations 70:2
calculus 40:11, 15
call 2:3 27:23 30:1

36:20 63:10 70:25
called 14:2 63:21 79:25
calling 55:1
Calvelli 43:16
Campus 93:24
cancel 91:3
cancellation 51:24 52:2, 15
cancelled 52:18 90:7, 16
capabilities 3:22 13:10, 14, 19 14:3 15:6 18:2 25:24 26:3 28:8 32:19 33:20 37:22, 25 38:13, 21 41:3 45:5 47:12 49:22 50:1, 9 53:17, 24 54:15 61:1 67:15, 16, 22, 25 69:1, 6 70:20 78:2 85:11 86:21 87:3, 14 89:10, 18 94:11, 16 95:7 96:9, 12
capability 7:22 8:10, 14 11:13 12:9, 15, 23, 25 15:10, 17 19:6, 7, 8 22:7, 16 29:2, 5 30:9, 21 33:11 37:19 38:8 40:23 41:20, 25 42:3, 25 46:13, 20 47:1, 20 50:4 60:14, 23 64:8 65:11, 14 66:2 67:25 68:4 76:18 77:2, 3, 4 83:23 84:4 85:4 87:1, 25 88:3, 14 89:18, 21 93:2, 16
capable 52:13 71:7 88:11
capacity 11:14 22:7, 16 29:5 38:14 47:3, 20 60:23 64:14 83:24 93:2
captures 69:12
careful 52:4
carefully 41:8 45:21 53:4 91:11
Caribbean 32:5
carries 44:1
case 31:12 39:24 76:1 77:17 91:21
categorize 25:22
cause 36:19 92:6
caution 37:7
Cavalier 75:22 76:6
CBW 66:24
cell 33:24 38:11, 18, 20
cells 42:4
CENTCOM 28:1
Center 82:4, 8
century 2:23
certain 26:24 42:16 45:22
certainly 20:9 58:12 59:10 64:1 67:7 76:12 79:11 80:18, 20 85:12
certainty 20:14
certification 71:10, 25

82:18
certify 16:2
chain 80:20
chains 60:15
Chair 23:11 43:3 47:25 58:7
chairman 1:14 2:3 6:1 7:3, 11, 19 10:1 11:4 14:16 15:1, 12 16:10 17:9, 16 18:15, 21, 25 19:1, 12, 14 21:5, 13 22:18 23:12, 14 27:4, 5, 8 29:22 31:5, 6, 8 34:17, 20 39:7, 8 43:4, 22, 24 44:1, 4 48:1, 3 51:5, 7 54:8, 9, 11 57:16 58:5 61:16, 18 66:14, 16 70:12, 13, 15 71:16, 20 74:6, 7, 9 78:5, 6, 20, 22 79:2, 4 83:1, 2, 4 87:8, 9 92:9, 11 96:16, 17
challenge 12:7
challenges 12:5 25:12 64:2, 13 71:11 73:2
chamber 57:15 58:2
change 3:13 22:24 29:17 40:15, 16 88:7, 22 93:2
changed 2:20 16:21 67:5
changes 16:16, 20 17:1 28:21 44:7, 9 79:14 82:24 84:12
changing 22:4 30:16, 19 59:1 94:22
channel 48:13
characterize 13:17
charge 62:2 76:21
charged 24:1
Charles 2:5 7:1
chemical 67:3
China 2:13 3:9, 15, 21 12:7 39:20, 23 40:3 47:11 64:3, 7 68:24 69:20, 24 80:25 83:9, 14 84:4 85:10, 13 86:6 87:25 92:15, 20 94:14, 16, 19, 20 95:9
China's 3:11 25:15 49:22 69:8, 16 70:4 94:24, 25
Chinese 41:5 50:19 85:14 87:12 94:21
choose 89:23
Chorus 43:25
Christopher 43:10
City 93:24
civil 23:17 41:5, 8, 11
civilian 43:6 46:1, 2
civilians 7:17 11:17 14:16 45:11 46:3 48:8
clarification 34:23 36:6, 11
clarify 35:4

clarity 51:21 74:13, 15 83:5
clashing 75:14
class 29:7 84:16
classic 95:12
classified 6:2
clear 16:24 21:25 29:3 67:24
clearer 3:19
clearly 42:17 48:10
close 68:1 70:1 75:5 86:24
closed 7:10 15:4 21:1, 24 28:25 34:14, 16 36:19 44:12 45:7 49:14 51:2 57:21 73:11, 20 84:15, 25 85:6 87:23 88:9 90:2 95:3
closely 23:23 42:3 46:4 50:23 63:8, 9 67:10 76:20, 24 80:9
closer 69:21
closest 38:5
cloud 50:5
clue 85:1
codified 24:18
coerce 95:10
coercion 70:11
coercive 8:17 69:5
coercively 69:2
Cold 37:11 49:10 81:24 94:4
colleague 78:11
colleagues 6:1 21:5
collision 61:24 63:5
Colorado 38:18 64:11
combat 14:3 85:10
combatant 7:5 24:11 27:21, 24 28:1, 9, 10 31:2 32:8 44:18 81:20 82:6 87:1 92:2
combination 67:25
combined 11:15 13:15 14:12 71:17 79:25
come 4:2 50:17 51:10 58:2 59:4 61:6, 22 82:22
comes 30:21 58:1 61:9, 12 68:15 72:10
comfortable 83:11
coming 32:16 33:14 76:1 79:17, 23 80:9
COMMAND 1:2, 3 2:6, 7, 16, 17 3:12 4:6, 14, 19, 22 7:2, 17 9:3 11:2, 7, 12 12:4 13:7, 9, 20, 23 14:9, 10, 13, 15, 16 17:11 19:10 22:1 24:11 25:5 26:11, 13, 16, 18, 23, 24, 25 27:10, 11, 19 29:24 30:25 31:4 32:21 33:16, 21, 25 34:3, 25 35:1, 5, 8, 18, 19, 23, 24

36:1, 8, 10, 21, 22 37:3 38:2 44:19 46:1, 6, 11, 13, 21 47:3 48:23 50:8 54:7, 22 55:14 59:20 60:24 62:8 64:13 65:1 66:9, 10, 11 73:15 78:13 79:20 80:6 81:21 83:20 87:2 92:2
Commander 2:5, 7 7:1, 5 11:1 20:6 23:22 28:10 29:25 30:2 31:2 32:9 51:16, 19
commanders 2:14 55:1 61:2
commander's 31:2
commands 2:10 4:8 27:12, 21, 25 28:2, 4, 9 44:18 46:9 82:6
Command's 13:24
comment 20:24 51:13
commenting 21:1
commercial 23:17 32:11, 16, 17, 20 37:21 38:3, 5, 8, 10, 11, 19, 21 39:4 41:19 42:4 49:17 54:4, 5 63:9, 13
commit 74:20
commitment 3:18 16:15 75:6 83:6
commitments 23:10
committed 13:9
Committee 1:9, 12, 14, 15 2:4 7:4 11:5 14:17 16:19 21:12 39:18, 19 40:1 43:5 48:20 54:14 61:6, 9 64:4 78:24 94:15
common 18:6 59:17
communication 18:22 48:13, 17, 24
communications 3:13 4:7 26:7, 9 38:6, 8, 14
Communist 83:14 84:4 85:10 86:6
community 69:20
companies 63:10, 19
company 32:16 63:13
comparison 68:9
compel 94:17
competencies 25:15
competing 26:8
competition 2:13
competitive 14:6, 8 37:18
competitor 85:17
competitors 5:3 12:5 65:12, 13 68:15
complete 68:17 70:23
completely 35:20 37:14
completion 3:11 65:7
complex 9:4, 7 15:18 22:2 28:14 60:24 94:10

complicated 39:15
compliment 74:17
components 34:3 87:21
composition 11:14
composure 74:17 75:1
concepts 39:12 81:8
concern 8:3 36:9, 15, 20
 41:4 50:4 60:20 86:8
concerned 23:15 40:6, 7
 48:11 73:5
concerning 34:25 48:7
 69:12
concerns 37:2 56:19
 64:19 78:19
concessions 20:22
concluded 57:19
concur 15:2
concurs 43:19
conditions 7:14 14:1
 53:9 78:16
conduct 14:18 71:3 72:7,
 24
conducted 2:25 50:14
 90:8
conducting 65:5
conducts 3:3, 4
confidence 53:8 72:9, 23
 90:25
confident 47:18 72:11
conflict 3:8, 21 4:1
 27:13 48:8 95:22
confront 8:17
congested 82:13
congratulations 75:1
Congress 14:9 16:2
 60:12 83:10, 12, 25 96:3
connection 41:15
conscious 47:16 88:18
consensus 77:13
consent 78:8
consequence 82:23 94:10
consequences 16:8 77:10
consider 28:21 33:4
 43:6 52:1
considered 17:2 37:13
considering 21:10 90:6
consistent 85:9 88:1
 96:10
constant 18:21
constitutes 24:19
construction 71:6
consulted 19:20 54:22
 55:14
contested 3:21 41:18, 21
 82:13
context 49:21 64:10
 74:22
contingencies 66:22
continue 6:3 50:17 61:8
 70:22 76:19 83:21, 22
 89:25 92:8

continued 7:12 14:8
 70:5 94:19, 20
continues 73:9
continuous 14:11
contract 56:25 57:4
contracting 25:19
contractors 11:18 45:17
contrast 78:18
contributes 71:9
contributions 11:22
control 3:13 4:6 9:3
 13:20 22:2 26:11, 13, 16,
 18, 23, 24 27:1 30:25
 31:4 34:25 35:1, 2, 5, 9,
 18, 19, 23, 24 36:1, 8, 10,
 21, 22 37:3 59:20 60:24
 62:16 73:15 83:20
convention 66:23
conventional 23:16 26:16,
 23 35:1, 6, 8, 18 44:16
 54:18
conventionally 31:1
conversation 61:22
conversations 64:4
cooperate 39:23 85:20
cooperating 39:17, 25
cooperation 39:19 40:3
 79:16
cooperative 40:8, 18
cores 60:16
Corporation 81:23
correct 45:16 63:4 67:8
 78:10, 21 90:8, 10, 11, 14,
 17
corrosive 23:9 53:15
cost 59:1, 3 65:22
Cotton 1:17 87:10, 11
 88:10, 20 89:2, 15 90:3,
 13, 16, 19 91:1, 15, 19, 22
 92:9, 14, 20
Council 15:24
Counsel 43:11
counter 12:14 47:14
 49:21
countering 14:6
countries 63:19 80:4
country 3:10 32:6 33:6
 34:22 68:17 70:18 71:5
 83:6 96:15
couple 8:23 27:16 32:14
 38:2 45:23 46:15, 16
 49:1, 23 50:13 58:18
 66:1 76:5 80:1 84:11
coupled 52:6
course 23:3 71:8 74:24
 75:20, 25 76:2 83:16
coverage 41:14, 17
craft 53:5
Cramer 1:18 74:8, 9
 75:13 77:6 78:4, 6

crazy 84:22
create 50:5
created 86:19
creating 12:8
credence 88:25
credibility 72:12
credibly 67:17
credit 42:20
crime 48:10
criminal 20:20 21:11
cripple 95:23
crisis 7:7 8:22 22:11
 29:13 48:20 93:3
criteria 61:25 62:1 63:5
criterion 63:17
critical 11:16 12:10
 14:14 21:18 25:15 48:17
 76:13, 16 77:14 86:15
 90:20
criticized 44:21
crossed 15:19
crucial 93:20
cruise 8:25 89:9
CSpOC 80:1
Current 12:7 16:16
 34:11 47:12 61:24 65:19
currently 19:18 20:10
 21:16 49:16
customer 25:21, 23
customers 42:15
cut 89:4, 8
cutting 90:6
cyber 18:18 33:12, 17, 20,
 24 48:14 54:16 67:15
 73:1, 8, 17, 18
cyberattack 73:6
CYBERCOM 34:2, 4
cybersecurity 36:22
cycle 4:25

< D >
D.C 1:10
daily 62:8
Dakota 75:4
damage 16:7
dangerous 2:24 48:18
 57:11
data 18:16
database 18:18
date 5:7 37:10 42:22
 49:9
dates 9:4 53:20 71:14
dating 30:10
day 27:15, 18 30:8, 12
 31:22 32:2 33:7 40:10,
 19, 22 49:11 50:16, 22
 62:11, 19 80:13 85:25
days 74:24 90:7
day-to-day 28:5, 12 53:4
DEA 33:2

deal 19:19 20:17 24:20
death 25:9 32:1
debates 56:21
debris 12:19 50:5, 15
 61:23 62:6 63:1, 15
decade 57:12 61:25
 69:25
decided 16:23 23:4 91:16
decision 13:18 21:8
 30:18, 25 40:11, 15 48:20
 49:7 64:4, 20 65:9, 10, 15
 76:3, 8, 16
decision-making 26:11
decisions 64:25 82:23, 24
 89:13
declaration 66:19
declaratory 16:12, 17, 21
 22:25
declared 46:19
deconffliction 35:12
decreased 67:6, 8
deemed 20:1
deeply 16:12
de-escalated 92:1
defeat 85:10, 22
defend 13:7 14:3, 11
 21:2 32:6 53:21 61:2
 70:3
DEFENSE 1:3, 4 3:6
 7:13 8:2, 10, 14 13:11
 17:20 19:17 23:23, 24
 24:1, 3, 8, 15 30:3, 12, 22
 32:9 38:19 39:12 43:8, 9,
 10 47:17 55:18 57:10
 60:25 75:10 76:15 79:16
 80:17 81:10, 17, 21 82:5
 83:21 87:20 93:16
defensive 30:7 58:25
defer 7:8 59:23 60:18
 77:18 89:16
definitions 37:9
defunct 12:21
degraded 80:25
degree 2:25 36:3 42:9
 90:4
degrees 46:7
delay 15:24 53:11, 14
 77:8, 15, 23
delayed 72:21
delays 53:19 71:13 72:1
deliberate 33:16
deliver 14:3 15:16 26:3
delivered 14:12
delivery 60:24 80:16
demand 19:10 32:21
 42:19, 23
demanding 25:23
demands 12:2
demonstrate 91:12
demonstrated 12:22 68:1

demonstrations 12:15, 24
69:1, 7
Department 8:9, 14
13:11 18:12 20:4 23:23,
24 24:3, 5, 7, 9, 11, 15
26:1 30:22 32:9 43:8, 12
45:21 46:3 81:17, 21
82:5, 11, 18 83:16, 21
87:6 93:16
deployed 45:3, 5
deputy 20:6
dereliction 32:5
descent 12:16
Describe 41:19
described 12:19
deserves 22:20
designated 27:10
designed 8:15 53:6, 7
60:2, 4 75:25 88:16 89:6,
20 95:13
desire 19:23
desired 45:12
despite 88:10
destroyed 50:14 85:14
destroying 3:24
destructive 13:4 68:1
detail 21:24 36:19 37:1
44:12 49:13 84:24 87:22
88:8
detailed 79:8 91:2
details 28:24 90:2
deter 8:6 14:2 21:3
29:9, 10 40:9 54:17 55:3
59:6 67:18 68:5 69:3
72:12 83:8, 13 85:22
94:4, 12 95:12
determine 55:24 57:1
deterred 95:11
deterrence 3:17 7:12, 18
8:11, 12, 13, 16, 21, 22, 23
13:11 16:15 17:1, 5 22:9,
11, 12 23:8, 9 44:20 52:8
54:20, 25 55:7, 8, 10
58:20 61:6 67:23 68:3,
11 74:21 80:10 81:8, 15,
24 86:1 88:1, 4, 14 89:11
93:3, 11, 17, 22 94:23
deterrent 2:11 3:6 21:19
56:24 72:11 83:19 90:20
92:23 93:8, 9, 25
detering 13:9 66:23
67:1 95:8
develop 3:9 13:16 39:3
50:4 94:20
developed 57:14 61:25
developing 23:19 26:6
56:3 73:3 74:2 85:9
development 3:11 12:8
37:19 40:24 73:23 80:18
85:18

developments 48:7
DHS 33:3
Dickinson 2:6, 8 4:3, 14
7:5 10:2 11:1, 3 14:21
15:1 17:10, 16 18:24
19:2, 15 23:15, 21 24:22
25:20 27:10, 14 31:19
32:7 33:15 37:17 38:1
40:20, 21 41:10, 23 45:8,
15 47:8 49:16 50:7, 11
54:1, 12 61:19, 21 62:4,
25 63:7, 20 65:3, 23 66:4,
7 70:17 73:5, 10 75:9
76:10 78:12 79:7, 19
80:14 81:2 85:7, 12, 24
86:4, 10, 18, 22 96:6
Dickinson's 44:18
dictatorship 20:18
difference 88:15
different 12:21 15:18
22:12 24:17 27:16 37:14
55:8 61:5 65:2 80:4
differently 47:15 77:20
95:12
dimension 41:11
diminishing 53:24 67:17
diminishment 53:17
direct 12:16 13:5 46:20
48:13, 16
directed 12:8
direction 66:1
directive 61:9
directly 75:10
director 33:25
Dirksen 1:13
disappointed 51:21, 23, 25
discourse 67:9
discuss 4:1 37:20
discussed 55:21
discussing 33:5 49:25
discussion 6:4 33:11
58:15 61:12
discussions 20:16 24:17
89:8
disinformation 48:15
disposal 68:5
disproportionate 95:15
distinguished 7:3 21:12
disturbed 32:25
diverse 11:7
divide 69:20
DN 12:15
DN-1 12:15
DNA 42:13
docked 12:20
doctrine 3:14 94:22
DoD 25:17 26:5, 8 30:1
56:25 57:4, 5 65:5 69:11
DoD's 4:13
doing 8:24 18:13 20:9
26:16, 18 38:24 44:19

70:1 72:17 79:17 82:20
85:18, 25 86:9
dollars 74:23
domain 3:21 7:23 12:6
13:13, 21 14:11 17:19
18:4 19:6 24:20 25:3, 6,
25 28:11 38:7, 14, 16, 21,
23 39:2 40:2, 23 50:13
76:15 79:18 85:8, 18
86:13, 14, 15 87:4
domains 80:8, 22
domestic 60:15
double 69:24
doubt 21:10
Dr 43:8, 14
draft 78:15
dramatic 88:7
driven 46:16 79:13
drove 88:6 89:21
drug 31:24, 25
dual-hatted 34:3
dual-use 12:22, 25
duty 32:5
dying 33:4
dynamic 39:14, 15
dynamics 8:23 22:9
29:13 37:11, 14 44:20
81:15 93:4

< E >

earlier 30:11 77:7 89:2
early 18:1 75:25 76:1, 13
earth 17:13 50:16
echo 57:15 58:2 73:12
edge 14:8 37:18 81:11
effect 37:12 46:24 53:19
89:20, 23 95:15
effectively 25:17 49:17
effectiveness 71:4
effects 14:12 16:25 37:5,
14 47:2
efficiencies 42:24
efficient 64:5
effort 33:16 53:1 60:11
62:1 67:23 73:17
efforts 5:5 12:11 18:14
27:12 30:7 53:13 56:21
59:14 65:4, 7 67:21
79:24 96:4
either 22:6, 7 28:12 40:3
80:24 89:22
elaborate 15:9 48:23
electromagnetic 42:10, 16
82:4, 6, 12, 20
element 16:12 34:1
elements 28:3
eliminating 37:20
Elon 41:13, 24
embedded 34:2
emboldens 70:11

emergency 92:4
emerging 47:13
EMP 42:9, 12, 16
emphasis 25:18
emphasized 8:5 58:19
employ 84:22
employment 42:19 88:5
95:1
EMS 82:4, 8, 14
enable 8:16 53:16 88:17
enables 13:20 14:2 88:4
enacted 84:2
encouraging 79:12
encrypted 18:22
endorse 54:24
endorsed 95:7
endpoints 22:6
engage 94:25 95:20, 21
engaged 19:18
engines 42:21 80:16
English 87:15, 17
enhance 23:8
enjoy 76:10
ensure 42:12 73:17
Ensuring 4:7 14:11
enter 20:3 41:18
entered 41:5
enterprise 38:15 80:6
96:9
enterprises 39:1
entire 5:2 59:18 66:12
76:25 81:23
entirely 12:21 52:14
environment 8:18 58:21
69:15 94:12
environmental 64:19
78:15, 17, 18
environments 41:19
equation 33:17
equivalent 31:3 71:18
81:25
era 9:5 71:15
Ernst 1:18 58:6, 7 59:8
60:8 61:3, 16 73:3
escalate 7:22 91:4
escalated 92:1
escalation 21:17 44:16
48:11, 19 93:13
escalatory 3:2 48:10
91:7, 23
especially 5:3 28:15
50:2 52:4 74:14 84:20
essential 5:9
essentially 4:13
established 33:24 48:12
establishment 29:23 82:3
estimate 69:19
estimates 69:11
EUCOM 27:25
Europe 11:11 13:2 45:5

European 3:7 48:23
evaluation 65:5
event 46:18 85:16
events 28:6 46:15
everybody 49:5
evolutions 53:6
exact 29:24
exactly 15:24 57:19
examine 55:24
examined 89:11
example 13:5 17:4 20:6
 30:24 42:20 46:18 50:18
 56:22 59:5 62:13 63:13
 79:24 80:2, 4, 8, 21 81:16
 91:25 95:4
examples 30:23 38:4
exceeding 69:11
excellent 51:16 81:5, 16
exception 71:16
Excuse 55:12
execute 7:18 12:3 29:2
 53:18 88:3, 4
executing 8:21 11:15
 88:12
exercise 3:1
exercised 27:15
exercises 3:3 27:16, 17
 28:6 46:14
exists 89:22
expand 37:22 38:13
 39:5 50:7 51:2 62:13
 79:17
expanded 32:18 37:23
 38:10
expanding 38:6 68:25
 69:16
expansion 3:15 8:2 80:3
expect 4:2 24:14 46:11
 62:2 83:17 86:23
expected 19:5
expensive 57:3, 7
experience 19:25 22:13
 84:17
experiments 71:3
expert 50:21
expertise 12:2 20:5
 27:21 28:10 33:20 46:21
 66:9
experts 57:1 73:19
expired 96:13
explain 22:25 57:20
 87:14, 17 94:1 95:5
explicit 92:22
exploded 32:18 79:22
explore 54:4
explosion 34:11
explosive 89:6
exposed 2:18
expressed 8:4
exquisite 19:7 38:25

86:12, 13
extend 2:9 3:22 58:17
extended 3:18 16:14, 25
 17:4 23:9 58:23
extending 57:2
extensions 72:16
extent 26:19 94:5

 < F >
face 3:20 7:21 58:22
 68:15, 18 81:24
faced 7:25
faces 71:11
facilitate 82:4
facilities 5:7
facility 71:2, 5
facing 28:17 52:12 64:2
fact 12:6 21:10 26:17
 29:22 47:16 49:3 55:8
 60:9 61:7 64:13 82:12
 85:17 87:3, 21 88:15
factor 17:2 70:2
factored 37:5
factors 23:4 30:17
fails 8:13
failure 5:8 77:23
fair 94:25
fall 3:3 8:1 87:11
familiar 26:15 75:21
 91:10
families 14:16
fantasies 75:15
far 68:24
fashion 3:5, 23
faster 26:3 37:25
favor 43:24 67:13
favorably 43:19
fear 92:5
feasibility 57:2
feedback 16:24
feel 62:7 83:11 86:2, 19
fellow 7:5 21:6
FFRDCs 81:18
field 25:14
fielding 21:20
fields 3:10
fight 68:9
figure 63:17
figured 72:5
final 35:22
find 89:24 95:22
finding 4:20 19:7 39:24
finish 90:1
first 14:2, 5 17:12 25:1
 27:22 28:16, 23 30:8, 12,
 19 32:25 34:21 35:7
 36:17 40:5 50:11 51:10
 52:17 54:24 67:7 69:23
 72:3 81:12 82:10, 17
 83:4, 9, 15, 18 84:11

87:19, 24 88:12, 16
first-use 88:23
FISCAL 1:4 45:22
Fischer 1:17 66:15, 16
 67:13 68:13 69:8 70:4,
 12, 13
five 24:2, 13 27:17 34:2
 92:4
fleet 42:15
flexibility 42:25
flexible 31:4 72:15
flight 50:18
FOC 65:14
focus 14:5 88:20
focused 56:18
folks 23:24 39:20
follow 61:21 65:18
followed 22:15 85:4
following 6:3 43:6 48:6
 66:21 84:12
follows 5:17 9:12 14:21
 78:23
foolish 92:7
force 8:19 12:9 14:12
 18:13 25:22, 25 26:1
 28:21 38:9, 12, 19 42:19,
 21 43:12, 17 46:2, 3, 12
 52:20, 22 53:1 59:24
 60:3 62:16 63:22 75:23
 76:20 86:19, 23 87:6
 90:24 94:24 96:11
forces 3:24 7:9 8:15
 9:9 11:11 19:22 22:17
 51:18 53:8 67:14 69:16
 70:8 82:18 83:19 84:6,
 13 93:7 94:20
Foreign 39:19 84:18
formally 8:1 87:20
formations 89:7
forms 24:17
formulated 57:15
forthrightness 74:13
forward 5:11 9:11 14:20
 20:2, 25 22:17 45:4
 46:25 56:16 57:18, 23
 59:12 65:6 67:11 73:9
 89:13
found 28:5 78:15, 18
foundation 68:3
foundational 93:10
four 51:25
fourth 16:5
fraction 81:6
frame 29:18 40:17
framework 13:11 39:4
 41:19
Frank 43:12, 16
frankly 32:12 45:19
 46:11, 14 50:16, 20 79:22
free 79:16

freedom 13:21
freedoms 83:6
frequently 22:15 47:22
frightening 74:21
front 7:15 32:7 52:20
 62:5
frustration 48:9
fuel 42:23
fulfill 72:1
fulfilling 4:4
full 11:10, 12 26:22
 46:13 65:11, 14 66:2
full-scale 25:11
fully 49:6 51:11 54:22
 55:14, 15, 16 58:2 69:4
 83:19 85:8 94:1
function 20:5 28:4 86:15
functional 77:10
functions 4:5
fund 94:2
fundamental 2:12 3:18
 16:1 53:3 86:10
fundamentally 3:13 23:6
 29:22 53:21 58:22 67:21
 72:10 82:22 87:25
funded 25:11 83:19
funding 16:1 53:12, 15
 77:8 83:10 96:8, 11
further 48:11 93:1
fused 18:11
FUTURE 1:4 3:21 26:9,
 10 36:4 42:7, 12 77:1
 85:1

 < G >
gained 3:19
galling 74:22
game 41:20 74:4
GAO 65:5
gap 27:20 76:23
gaps 2:18 19:9
gas 42:22
gathering 63:24
GBSD 59:19, 23, 24
General 2:6, 8 4:3, 14, 18
 7:5 10:2 11:1, 3, 23
 14:21 15:1 17:10, 16
 18:24 19:2, 15 23:14, 21
 24:22 25:20 27:10, 14
 31:19 32:7 33:15 37:17
 38:1 40:20, 21 41:10, 23
 42:6 43:7, 11 44:18 45:8,
 15 47:8 48:5 49:16 50:7,
 11 53:8 54:1, 12 61:19,
 21 62:4, 25 63:7, 20 65:3,
 23 66:4, 7, 17 70:17 73:5,
 10 75:9, 19 76:10 78:12
 79:7, 19 80:14 81:2 85:7,
 12, 24 86:4, 10, 18, 22, 25
 91:8 95:17 96:6, 18
generally 31:20

gentlemen 7:15 11:3
 19:12 34:21 44:4 58:8
 79:5 92:12 96:14
geographic 27:12 31:2
geopolitical 27:11
geostrategic 7:20
getting 17:3 19:1, 2, 3, 24
 30:6 41:13 67:21 69:6
Gillibrand 1:16 23:13, 14
 24:18 25:9 26:4 27:3, 6
 34:24
give 17:13 28:24 31:1
 42:20 53:8 56:22 62:6
 72:9 77:19 85:1 90:1, 10
 95:3
given 7:6 24:18 64:12,
 24 65:25 66:12 84:17
 86:2
gives 69:20
giving 72:21
glad 57:22 91:15
glide 12:16
global 7:20 17:20
globally 11:11 12:10
 77:5
globe 62:11
go 17:7 20:2 21:24 23:6
 35:23 36:18 37:1 40:24
 42:18 44:11 49:13 52:19
 58:14 59:22 68:24 72:18
 73:9 78:21 84:24 87:22
 88:8, 16 89:24
goal 17:23 45:10 55:23
goals 17:8
goes 34:7 61:11 72:18
going 7:8 8:14 15:25
 18:14 20:15 21:2 22:6
 27:9 29:4, 6, 8 31:3 32:3
 36:3 40:6 41:6 45:24
 46:25 47:19, 20, 21 54:3,
 6 59:12, 13 64:15, 17, 25
 65:18 68:24 77:21, 22
 81:25 82:11 83:12, 13, 21
 85:14, 21 88:19 89:15, 25
 93:1, 16 94:11
Good 2:4 11:3 18:8
 24:13, 16 30:11, 17 36:24
 47:19 48:4 56:16 72:14
 92:22 93:18 94:13 95:5,
 17 96:13
goodness 57:20
gotten 77:21
government 51:12
granted 58:12 82:13
grapple 39:14
grateful 61:13
great 26:19 38:12 40:20
 42:20 68:7 80:14 81:3
 82:2, 25 83:8 86:22
greater 68:10, 11

greatly 69:11
grew 33:17
ground 4:4, 12, 16 41:14
ground-based 56:24
group 57:1 79:25
growing 12:6 39:3, 19
 62:6 70:6 80:2, 6 95:1
growth 41:3 62:10 70:5
Guard 11:20 45:11
guardians 7:17 14:15
guess 20:24 52:8 63:16

< H >

habit 77:22
half 38:17 64:17
Hampshire 78:11
handling 5:6
happen 62:3
happened 44:24
happening 7:7 13:17
 25:2 40:13 64:6 73:4
 86:12, 16
happy 28:24 34:13
 36:18 87:22
hard 11:11 48:16 91:6
hardened 3:10 73:18
hardening 42:10, 12
harmful 16:25
harness 81:16
Hawley 1:18 92:10, 11,
 17, 19 93:5, 12, 18 94:13
 95:5, 17 96:13
headed 26:21
headquarters 11:14, 17
 33:21, 22, 23 64:11
Health 43:9
healthy 90:20
hear 74:15, 16
heard 21:18
HEARING 1:1 2:3, 20
 3:25 5:1 56:2 70:16
 77:8 96:18, 22
heavily 37:19
help 64:24
helps 13:14, 16
heroics 60:3
HHS 74:25
high 73:25
higher 26:25 35:23
highlight 63:2
highlights 38:2 79:20
highly 21:6 23:9 44:22
hinder 80:19
hire 66:6
historic 8:22
historical 39:22
historically 7:6
history 7:25 8:24 28:17
 29:14
hit 42:14

hitting 77:20 82:16
hmm 41:17
hold 67:17 80:15
holding 8:11, 12 70:15
home 75:20
homeland 4:9 68:19 82:7
Hon 1:13 2:1
honorable 11:8 43:7, 12
honored 11:5
hope 32:24 33:4, 8 54:14
hopes 50:4
host 71:7
hostilities 16:16
hotline 48:12, 22, 25
hotlines 49:9
hypersonic 12:16 29:16
 30:9, 21
hypersonics 29:20 30:15
 31:4 47:12
hypothetically 52:14

< I >

ICBM 75:4
ICBMs 15:10 50:5 57:20
idea 17:14 54:25 55:1
 67:19 69:22
Identification 62:17
identified 17:21 27:20
identify 13:14 27:1
 50:12 62:19, 20 76:22
identifying 17:18 19:9
identity 31:13
IG 65:5
ignored 44:23
illegal 2:21 79:10
images 32:15
imagine 18:15 75:4
imbalance 70:8
immediate 20:8
immediately 6:2 27:23
immense 25:13
impact 36:7 50:6, 10
 53:11 59:11 72:1 78:16
impacted 60:10
impacting 36:14, 15
impacts 5:10
imperative 8:7
implement 24:4
implementation 53:13
implemented 25:17
implications 5:2 20:8
 37:2 56:6 59:9, 12 87:18
importance 4:10 11:21
 17:4 80:20 82:11
important 20:1 21:20
 30:21 31:20 36:18 52:19,
 22, 25 68:6, 23 70:16
 72:8 74:2, 20 75:25
 77:14 93:6 94:1 95:8
 96:2

improbable 44:22
improve 37:24
improvements 58:25
improving 53:24
inaction 52:6
incentivized 96:1
include 12:15 42:10
 54:15
included 89:12
includes 57:25
including 11:17 54:16
 71:13 93:12
incorporating 17:18
increase 12:12 25:6 44:8
 84:13 94:23
increased 12:11 79:15
increasing 40:3 64:7
 68:13 73:5
independent 2:17
indicated 81:3
indicating 45:3
indication 84:21
indirect 24:10
individually 41:3
Indo-Pacific 3:16
INDOPACOM 27:25
indulge 22:19
indulgence 45:7
industrial 60:21, 25 81:6
industries 80:17
industry 38:3, 8 81:11
influence 14:6 40:12
information 13:16 18:19
 30:15 33:14 48:15 49:18
 63:2, 12, 23 78:23
informed 13:13 49:7
 56:9, 12 58:2 87:20
infrastructure 5:7 9:7
 16:7 65:24 70:22 71:13,
 22 72:19, 20 93:20 94:2,
 7, 9
inherited 4:5
Inhofe 5:13, 17 43:18
initial 31:17 46:19 47:1
innovative 25:10, 13
input 16:22
INSERT 78:24
inside 15:23 44:12 55:9
 56:6 67:22 82:18 83:20
 89:11
Inspector 43:7
instance 95:6
instrument 7:24 55:2
integral 68:2 93:10
integrate 4:15 26:7
integrated 8:15 13:11
 27:23 34:1 54:20, 25
 55:7, 10 67:23 68:3, 11
 80:10 93:10
integrating 4:11 30:3
 86:20

integration 17:14 25:13
 26:14, 20 28:8 38:11, 20
 39:1 42:4 87:6
integrity 80:21
intelligence 13:16 26:10
 28:8 69:19
intends 69:10
intense 4:22
intent 13:18
intention 16:13
interacting 36:9
interaction 12:23
interagency 11:19 37:21
intercontinental 9:1 50:3
 60:6
interdicting 31:25
interest 22:23 31:10, 11,
 13, 18 36:12 49:20 94:21
interested 5:1
interesting 32:17 41:12
interests 12:2
international 2:22 11:23
 20:19 23:15, 19 31:22
 50:21, 24 58:11 62:21, 24
internet 9:3 41:14
internship 46:5
interoperate 35:11
interpret 25:6 86:16
interrupting 55:12
interruption 53:14 77:8
intimidating 84:5
invade 92:6
invasion 2:21, 25 21:17
 49:21 58:9 79:10
invented 81:22
investments 26:22
involved 16:12 41:21
 55:16
involving 3:8
Iran 19:19, 23 20:2, 16,
 22 31:10, 11, 15 50:4, 8
 51:1
Iranian 50:1
ISLAND 2:2 71:19
ISR 31:19, 24 32:12, 23
issue 42:4 59:17 63:15
 75:2 81:22
issues 23:25 55:3 61:11,
 13 62:21 68:7, 12
its 2:25 3:3, 11, 12, 22, 23
 4:19 5:6 11:14 13:4
 16:6 26:9 28:21 43:1
 52:24 62:22 66:24 71:12
 87:17 94:20

< J >
J3 33:25
Jack 1:13 2:1
JADC2 18:13 26:5, 6, 16,
 17 35:3

jam 41:16
James 2:6 11:1
January 12:20
jeopardize 73:6
Jim 30:3
JISTS 27:24
job 23:22 83:11 84:18
joining 73:25
joint 11:7, 10, 15 12:8
 14:12 27:23 33:24 38:19
 46:13, 22 82:3, 4, 8
judges 68:10
judgment 52:10
July 24:1
Junior 73:23, 25
justice 78:17

< K >
Kaine 1:16 39:9, 10
 40:20 41:10 42:5 43:2, 4
Kansas 93:23
KC-46 42:10
keep 35:5, 8 51:14 59:15
keeping 90:20
Kelly 1:17 48:2, 3 49:15
 51:3, 5
Key 13:12 16:12 29:2
 42:14 59:19 79:13 81:14
kids 73:24
killing 31:21 32:2 33:6
kind 18:12 24:10, 23
 27:25 34:4 39:13 41:8,
 12 42:1 45:13 77:9
 84:23
King 1:16 31:7, 8 32:24
 34:5, 15, 18
kleptocracy 20:19
know 2:18 4:18 5:4
 15:20 16:11, 23 20:3
 22:5 24:23 25:25 32:15
 36:6 48:9 49:17, 18
 55:20 56:16 58:14 61:5
 62:12 63:14 64:18 68:24
 69:14, 22 73:21 75:24
 78:10 80:15 83:7 85:21
 86:18 91:16 92:5 94:18
known 74:12 80:21 89:9
knows 46:23 48:20 91:24
Korea 50:2 51:1
Korean 50:1, 8
Kremlin 3:1

< L >
label 30:22
laboratory 71:2
lack 23:15 24:18 51:21
 53:21
Ladies 7:15 11:3
land 80:8
large 3:1 32:2 95:12

larger 21:15 71:17
large-scale 95:20
largest 7:20
late 12:24
Latin 32:4
launch 80:17
launched 12:18 89:9
launches 49:24
launching 80:19
layer 12:10
layered 77:4
lead 20:22 48:18
leaders 13:18 46:24
 76:17 84:18
leadership 4:8 7:14
leading 25:13
learn 51:25
learning 22:10 29:13
 93:3
leave 21:4 74:25
leaving 95:15
led 20:18 23:16 55:19
left 15:15 34:9 45:22
 50:15 58:24 75:11
leftovers 94:4
leg 4:25 42:9 43:1
legal 41:19
legitimate 84:21
lesser 29:11
lessons 22:10 29:13
Lester 43:8
lethal 12:9
letting 90:5
level 7:23 55:4 95:1
levels 8:22
leverage 28:11 80:12
 81:10
liability 80:22
liaison 11:23
life 58:17 72:16
lifecycle 76:19
life-extended 94:5
light 16:15
limited 44:16 95:1, 6, 11
line 60:20
lineup 36:24
link 17:12, 23
linking 18:5
list 72:4
little 32:8 35:4 36:11
 39:12 45:9 49:25 54:4
 58:14 59:13 75:16, 19, 20
 87:14, 17
located 66:3, 4
location 64:16, 19, 22, 23
 65:8, 19, 21
long 21:18 49:8, 12
 58:24 65:20, 22 69:5
 72:21 87:25 90:11
longer 13:6 23:6 94:4

long-going 65:4
long-scheduled 91:23
longstanding 91:2, 23
long-term 2:12
look 5:11 9:11 14:19
 18:23, 24 20:25 24:24
 25:1 29:20 32:11 40:13,
 21, 23, 25 41:4, 23 50:23
 57:17 62:18 67:11 70:4,
 5 76:19 77:1, 3 80:10
 84:25 89:12 92:7 96:8
looked 33:18 67:10
looking 19:6 26:1 38:22
 41:8 54:15 56:16 57:22
 62:23, 25 63:6 65:6
 73:19 76:25
looks 22:8 40:7, 8, 18
 69:6
loop 48:24
Lopez 43:8
lot 17:17 23:6 24:16
 33:11 36:19 37:15 39:25
 42:22 49:22 50:22 56:10
 59:24 61:11 69:14 73:14,
 17
loudly 75:17
love 37:1
low 50:15
low-Earth 50:5
lower 59:2
lower-yield 94:22
lowest 55:4
Lowman 43:10
lucky 73:23
lunar 41:6
luxury 29:11

< M >
Ma'am 53:14, 25 55:20
 56:10, 15 58:4 62:25
 63:7 65:3 70:10
main 14:5 38:4
Maine 31:22
maintain 37:18 53:3, 7
 71:22 81:11 90:25 91:8,
 11, 12, 13, 20 93:17
maintained 2:22
Maintaining 2:11 14:8
 42:25
maintenance 60:1
major 17:12 27:17
 34:10 37:12 67:5 70:19
 71:6
making 4:19 18:17
 19:25 20:22 26:22 27:1
 36:12 48:15 64:5 66:10
 92:21
manage 93:13
management 76:19
manager 30:1
Manhattan 5:8 9:4 71:14

Manpower 43:13, 15
45:22
mapping 47:13
March 1:6 80:15
margin 15:15 58:24
marines 7:16 14:15
market 32:12, 18, 20
Martinez 43:8
massive 18:15
massively 57:6
match 29:1 70:7
matching 25:15
material 80:24
matter 48:21 57:12 95:9
matters 51:11
maximum 94:5
mean 27:13 87:17
means 3:15 40:10 47:1
72:16 73:24 77:9 87:16
media 48:14 89:3
meet 9:8 15:17 27:1
28:11
meets 2:4
mega-constellation 42:1
Member 5:13 21:12
22:20
Members 1:15 7:4 11:4,
17 14:17
memo 24:2
men 2:10 11:6
mentioned 25:4 29:23, 25
33:22 35:2 41:1 59:9, 23
77:6
message 51:15 52:5, 6, 7,
14 68:16
messaging 40:15
met 1:12 42:6
methods 60:1
midst 92:20
military 28:20 32:22
33:3 41:7 46:2, 8 48:12,
13, 18 55:2 64:8 74:1
80:25 89:7
military-to-military 48:17
Milley 7:11, 19
mind 51:14
minds 20:13
minimum 8:20 21:25
29:4 88:1, 4, 14 92:25
93:5
Minuteman-III 15:10
51:24 57:2 58:17, 23
59:5, 10 60:2
Minutemen-III 90:9
minutes 48:22 49:3, 5
96:19
missile 3:10 4:6, 9 8:25
17:19, 20 29:16 30:3, 4
50:3 76:14, 15 89:9
missiles 9:1 60:7 90:9
92:3

mission 5:9 7:18 8:21
11:16 13:23, 25 14:2, 18
35:12, 15 65:16, 25 66:12
70:23 72:24, 25 73:1
86:5
missions 12:4
Missouri 93:23
mistake 9:9
mistaken 91:25
misunderstandings 48:18
mitigate 77:22
mitigating 16:4
mitigation 12:19 16:5
25:12
modern 21:15 59:2, 25
72:15, 20
modernization 3:12 4:23,
24 8:3 9:8 15:6 21:21
53:12 59:14 60:6, 11
71:12 76:8, 22 77:9, 13,
16 93:20 94:2
modernize 9:6 51:18
59:11, 16 61:4, 8 74:5
modernized 60:2
modernizing 5:1 59:18
moment 22:19 74:14
75:16
money 15:22 65:1
monitoring 31:24 76:2
month 11:16 75:23
months 36:25 50:13
74:24 92:4
moon 41:7 77:24
morning 2:4 11:3 48:4
61:20 73:12
Moscow 52:5
motion 43:19 44:1
move 25:23 37:13 64:16,
21 72:16, 17
moved 12:21 43:21
movement 78:13
moving 22:17 65:6, 12,
21, 25 82:19
much-improved 59:20
Multiple 43:23
mundane 64:1
Musk 41:13, 25
mutual 17:8
myriad 4:15

< N >
Nakasone 34:1, 6
narcotics 31:23
narrow 66:22
NASA 50:23 62:20 63:8
nation 2:9 3:8, 17 7:13
16:6 21:2 28:17 30:13
49:6 58:13 60:6 81:17,
22 89:22
national 3:6 5:5 7:24
8:20 11:20 15:7 19:16

21:9 22:23 31:10, 11, 18
47:17 55:25 70:21, 25
71:15, 17 81:22 93:24
national-level 46:24
76:17 82:1
nations 36:7, 10 41:9
58:25
nation's 8:15, 24 21:19
36:22 37:3 55:22
NATO 11:11
NATO's 79:11
nature 3:13 4:1
Navy 43:13
NC3 9:6 18:1
near 7:21 20:21
near-peer 5:3 8:19 92:16
necessarily 29:1 65:8, 13
76:25
necessary 15:16 57:8
59:15 72:22, 23 88:3
need 3:14 7:8 8:5, 6
19:8 22:1, 3, 14 25:18
29:5, 15 37:15, 23 39:21
44:8 45:25 47:6, 13
51:18, 19 53:13 60:12, 22
61:4 64:15, 25 65:9, 14,
16, 21, 24 67:24 70:1, 3,
22 72:6, 16, 23 74:4, 15,
16 76:3, 24 77:20, 25
81:14, 25 83:21, 24 84:2
85:21 86:4, 8, 13, 17
88:17 90:23 92:25 93:1
94:22 96:10, 12
needed 20:11 22:15
47:23 72:12 79:14 81:7
94:8
needing 49:12
nefarious 13:10
negatively 60:10
negotiating 20:2, 21 31:15
negotiation 20:7
negotiations 19:19, 20
20:10 31:16, 17
Nevada 70:19, 21, 24
71:15, 16
never 7:24 35:9 36:23
66:18
New 4:24 14:7 20:6
21:20 25:24 28:15 37:25
38:17 39:3 44:20 45:11
57:3 59:2 64:13, 16
65:21 78:11
news 41:11, 12, 13
nimble 74:4
NNSA 15:11 71:11
72:18, 21 93:20 94:2, 9
NNSA's 16:2
NNSS 70:25 71:8
no-first 88:10, 25
no-first-use 22:24 66:18

88:2
nominations 43:6, 18, 20
non-DoD 82:8
non-Federal 25:18
non-nuclear 26:11 66:20
67:5, 15
non-state 41:18
non-strategic 70:5 89:5
90:5 95:10
normal 53:4 87:15 91:9
Normally 3:2
norms 23:19 24:18 25:7
North 50:1, 2, 8 51:1
75:4
Northern 4:8
note 6:1 69:9 71:14
notice 1:12 90:10
notification 61:25 63:5
notified 63:19
November 3:23 13:5
40:25 46:19 62:13 85:15
NPR 89:13, 15
NSA 71:17
nuclear 2:11, 23 3:1, 3, 6,
8, 12, 14, 17 4:6 5:5 8:12,
13, 15, 19 9:2, 4, 6, 7 15:7,
23 16:11, 22 19:19, 24
20:1, 16, 17 21:15, 16, 19,
21 22:1, 2, 25 23:5 26:13,
18, 24 28:19, 21 31:11, 12
34:11, 12 35:2, 6, 8, 19, 23,
24 36:8, 21, 22 37:3, 12
44:8 45:3 47:17 48:7, 19,
21 49:3 51:18 52:12
54:14, 17, 23 55:6, 9, 15,
17, 19, 22, 23, 25 56:1, 8,
17 57:7, 10, 13, 18 59:20
60:16, 24 61:6 66:21, 22
67:2, 10, 11, 14, 16 68:2
69:16 70:6, 20 71:1, 4, 10,
25 72:7 73:15 83:20
84:10, 13, 20, 22 85:4
87:13 88:5, 11 89:4, 5, 11
90:1, 5, 20 92:8, 15, 17, 22,
23 93:7, 13, 17, 24 94:17,
20, 23 95:1, 6, 7, 10, 11, 15
nuclear-armed 83:8
nuclear-capable 7:21
28:18 68:7
Nudol 40:25 46:18
50:15 62:12 85:16
number 4:15 7:9 22:10
23:4 25:4 29:13 32:2
59:25 60:5, 23 61:5 64:3
66:5

< O >
Obama's 66:20
objection 5:16 78:22
objective 56:9, 11

<p>objectives 9:8 objects 50:19 62:9 observing 84:18 obstructed 56:20 obtaining 31:10, 12 obviously 50:3 62:10 70:6 occurred 85:16 occurring 13:15 October 12:18 Offensive 30:8 offer 16:18 21:23 52:17 56:6 67:20 68:19, 21 Office 1:13 11:23 officers 11:24 Oh 78:9 Okay 20:12 21:4 53:10 54:1 55:21 56:8 63:25 65:17 91:22 old 38:18 59:10 75:21 76:7 onboard 37:25 ones 80:13 83:18 85:1 ongoing 2:21 7:6 online 29:17 30:8 on-orbit 12:11, 12 op 28:13 open 96:18 OPENING 2:1 5:15 25:4 29:23 41:1 45:18 69:9 86:11 87:12 operate 2:12 58:21 59:25 operating 18:7, 10 59:2 85:25 Operation 82:4, 8 95:21 operational 8:9 11:12 20:8 44:7 46:13, 19 47:1 52:25 56:6 65:11, 14 66:2 77:25 82:16, 23 84:12 88:7 operationally 36:25 operations 4:21 5:10 14:18 26:14 28:5, 7, 12 33:25 46:15 53:4, 5 73:7 79:25 80:19 82:5, 21 91:9 opinion 16:25 52:6, 9 72:21 74:25 84:19 opinions 61:5 74:19 opponent 55:3, 10 68:5 95:13 opponents 68:22 75:17 opportunistic 40:7, 17 opportunities 54:4 76:8 opportunity 55:18 75:9 opposite 29:24 option 93:21 options 55:24 95:6 orbit 12:22 40:24 41:4 50:6, 16 63:14 85:15</p>	<p>order 2:3, 22 26:2 28:11, 22 37:24 53:16 59:6 60:13 61:7 68:8 70:22 84:13 86:11 94:23 ordered 5:16 organization 33:19 organizational 33:19 organizations 37:22 organized 18:17 OSD 89:17 OTAs 25:17 ought 85:20 outcome 30:5 outdated 39:13 outer 85:8 86:7 outline 24:23 outlined 24:2 82:3 outlining 24:14 out-of-cycle 3:1 outset 95:22 outside 57:1 85:3 95:21 outsoken 51:16 overall 7:13 15:14 19:23 21:1 37:5 76:14 91:13 overlap 35:15 overlapped 26:19 overlay 35:3 overlooked 67:8 overseen 70:25 Ovost 42:6</p> <p>< P > pace 37:22, 25 58:22, 24 59:6, 15 93:21 Pacific 95:24 pacing 12:7 59:8 par 78:1 PARCS 75:21 76:6 Parker 43:12 part 2:16, 23 3:23 9:2 13:19 16:22 19:16 20:6, 15 38:11 42:12 44:9 53:21 54:20 55:7 67:9 69:12 77:16 79:23 80:17 84:18 90:20 participate 54:23 55:15 particular 4:3 8:12 23:23 27:15 31:12 33:21 41:2 55:7 59:21 73:13 76:12 89:18 particularly 15:9 16:15 32:4 36:21 47:11 48:14 73:4 75:6 parties 31:14 39:16 partnered 11:15 partnering 37:21 partners 8:16 11:22 13:8 14:7 24:16 38:5, 10 39:4 63:9 66:25 79:9, 21, 23 80:12 81:6</p>	<p>partnership 38:3 80:3 parts 4:25 pass 84:1 passed 73:24 path 26:21 30:25 Paul 34:1, 6 pay 75:5 peace 58:12 peer 28:18, 22 68:14 peers 7:22 Pentagon 56:20 86:21 people 12:3 21:9 31:21 32:1 33:4, 7, 23 59:25 60:18 68:17 74:16, 23 85:19 92:5 people's 75:15 percent 12:12 45:10, 16 64:14 perception 16:16 perform 17:14 86:5 performance 52:24 period 4:23 person 74:25 personal 84:19 personally 55:19 personnel 4:20 11:18 66:6, 8 perspective 17:20, 24 33:19 41:5 Peter 43:11 Peters 1:17 79:3, 4 80:14 81:3 82:2, 25 83:2 picture 3:20 18:7, 11 piece 18:10 26:15 34:4 35:22 41:9 55:9 59:21 72:22 82:15 pieces 37:11 50:15 83:20 pillars 80:11 pit 15:10 16:6 pits 15:20 PLA 12:7 95:19 place 40:14 52:12 65:2 77:11 places 81:18 plain 87:15, 17 plan 5:2 8:9, 13 12:4 21:21 27:11 86:7 93:15 52:25 planning 28:7 34:1 40:2 52:25 planning-only 28:4 plans 28:13 40:17 86:8 plants 48:7 plate 24:7 platform 30:23 platforms 35:10, 11 plausible 88:5 play 19:22 26:10 66:23 playing 23:18 plays 70:20 please 9:9 10:2 15:9 19:13 23:13 27:7 30:18</p>	<p>31:7 34:19 39:9 44:3 48:2 51:6 54:10 58:6, 16 61:17 66:15 70:14 71:23 74:8 79:3 83:3 87:10, 14 92:10 pleased 7:4 11:24 15:12 26:17 46:8 plenty 55:18 88:13 plutonium 5:6 point 15:8, 22 16:3, 5 24:6 26:12 27:18 30:18 42:3, 14, 20 44:13, 24 46:23 52:13 57:24, 25 65:18 68:6 69:17, 23 73:13 87:20 89:17 91:7 94:3, 8 points 5:8 15:19 21:23 49:1 57:25 policy 16:13, 17, 21 20:1 22:24, 25 23:24 54:14 55:22 56:4, 9 57:13 66:19 67:1 85:9 88:2, 11, 23 89:1 political 55:3 77:14 portfolio 89:11 portion 96:18, 21 portions 26:24 55:19 posed 58:10 position 17:7 23:1, 3 49:4 83:7 positive 41:13, 16 possible 16:20 21:22 55:4 56:4 65:11 77:15 94:6 possibly 65:10 postponement 75:3, 7 postponing 75:8 postulate 35:25 Posture 16:11, 22 22:16 23:5 28:19 29:5 34:11 40:16 44:9 47:17, 20 54:23 55:15, 17, 19, 23 56:1, 17 57:18 66:21 67:10, 11 73:13, 16 79:7, 14 81:4 83:24 88:1 89:12 90:1 91:10 93:2 95:8 postured 14:10 potential 12:22, 25 28:17 44:15 53:19 62:21 63:15 68:2 84:10 94:18 potentially 29:8 40:16 64:18 power 7:20, 24 12:9 13:4 14:4 81:10, 17 83:8 92:15, 17 93:12 95:24 powerful 39:2 powers 48:19 68:8 84:20 practical 53:19 77:10 PRC 12:11, 18, 21 44:9</p>
--	---	---	--

69:10
PRC's 8:2
precisely 54:21
predates 9:3
predictable 3:5 96:8
pre-emptive 95:20
pre-emptively 96:1
prefer 85:5
prepared 5:17 9:12 12:3
 14:21 45:1 66:25 95:21
preparing 44:17 95:20
prescheduled 52:15
presence 46:8
Present 1:15 43:5 67:1
presents 29:21
preserving 2:11
President 16:23 30:16, 18
 49:4 55:22 66:20 84:7
presidential 9:8
presiding 1:14, 15
press 41:13
prestige 13:4
Pretty 28:14 30:17
prevent 84:4
preventing 32:1
previous 12:24 54:25
 58:20 69:11 84:25
previously 8:5 15:20
principally 71:1
prior 2:25
priorities 25:5
prioritize 26:8
prioritizing 93:20
priority 9:9 13:23 25:5
 29:11
private 41:21 75:11
 91:20
prized 43:1
probably 20:23 37:10
 48:9 52:8 58:19 65:4
 75:18, 24 80:10
problem 16:4 29:22
 33:1 37:13 50:12 69:13
 81:25 84:16
problems 25:13 27:9
procedures 46:22 66:11
proceeding 15:16
process 20:21 37:24
 54:23 55:14, 15, 17 56:19
 57:24 62:15 63:24 64:5
 65:23
processes 26:2 46:22
 66:11
procurement 64:6
produce 60:16 61:1
 89:20
produced 56:19
producing 30:5 78:2
product 58:1
production 15:10 16:6

60:15
productive 51:14
professional 12:9 52:9
professionals 11:8
professions 74:1
proficient 46:17
PROGRAM 1:4 56:25
 57:2, 7 71:1, 24 72:4, 14
programmatic 78:1 82:23
programs 15:15 25:11
 42:12 46:5 53:16 71:13
 93:21
progress 4:18 5:1 17:17
 18:8 79:8 86:20
Project 5:8 52:7 63:15
 71:15 93:12 95:24
projected 93:21
projection 12:10
projects 25:11 71:6
proliferated 42:1
proliferation 61:23
promoted 17:11
promulgated 47:18
proper 55:24
properly 18:16, 17
proponent 82:16
proportionate 24:20
proposed 64:10
protect 3:17 13:7 14:10
 68:19
protected 18:18 36:23
protection 42:16
protocol 30:16
protocols 30:19
proud 71:9 72:5 93:25
proves 64:22
provide 13:18 17:6 20:5
 31:24 32:18 42:2 46:24
 47:2 56:10 63:1 73:10,
 20 76:14, 16 82:19, 22
 83:12 96:12
provided 79:7
provides 13:20, 24 28:9
 38:20 87:1
providing 41:14, 25
public 51:13, 17 67:9
published 57:18
publishing 67:11
pulls 18:12
pulse 42:10, 17
purpose 22:25 66:19
 67:2 78:7 79:11
purposes 13:10 35:13
 49:8
pursuant 1:12
purview 32:8 33:1, 2, 7, 8
pushed 56:20
put 30:8, 11 36:13 37:7
 49:4 52:1 56:2 72:3
 74:1 81:13 88:24

Putin 20:19 21:7 92:6,
 21
Putin's 2:24 44:7 84:9,
 12, 21
putting 19:10 27:23
 45:13
puzzled 64:12

< Q >
qualities 74:12
question 15:5 16:1, 7
 20:13 21:13 22:19 23:22
 31:23 32:10 33:5, 10
 34:10, 14, 16, 24 36:5
 41:11 42:5 44:12 45:15
 47:19 52:9 55:13 62:4
 77:23 79:15 80:23 81:9
 83:23 84:15 86:22 92:14
 96:2
questioning 69:24
questions 7:8, 9 9:11
 14:20 15:3 22:3, 14 31:9
 39:18 49:13 51:9 54:2
 57:14 61:22 64:8 77:20
 78:2 81:14 84:10, 11
quick 29:19
quickly 3:22 21:22
 25:14, 24 45:20 47:10
 62:14 65:11, 12 68:8, 9
 78:10
quite 32:12 45:19 46:11,
 14 50:16, 20 62:13 76:4
 79:22
quorum 43:5
quote 12:19, 20 28:16
 69:8, 10 78:16, 17 81:6, 8
quote/unquote 91:4

< R >
race 23:17
radar 75:21, 22
radars 4:16 17:21 19:7
 76:13
radiographic 71:7
raise 64:8, 10
raised 75:3
raising 75:15
Rand 81:23
range 4:16 56:7 66:22
rank 91:16
Ranking 5:13 21:12
 22:20
ranks 11:9
rapid 37:19
ratification 4:23
Raymond 86:25
RD-180 80:16
reach 65:14 69:16
reached 94:3
readiness 44:8 53:6, 7
 81:1 84:13 91:12

ready 7:18 9:10 13:7
 14:14 30:8 40:17 52:11
 84:6
real 22:11 35:21 48:16
 66:19
realities 3:7
reality 8:5, 19 75:14, 16
realization 77:13
really 17:21 18:12 32:21
 38:1, 3, 9, 16, 20 41:24, 25
 46:16, 25 47:10 58:10
 60:12 61:4 62:12 74:2, 4
 76:20 78:10 79:22 80:9
 87:5 91:3
realm 39:13
real-world 17:4 28:6
 46:14 69:6
reason 2:14 36:5, 14
 56:18 59:21 89:19
reasonable 45:23
reasons 58:19 66:18
reassessing 64:20
rebuild 21:19
recapitalization 15:14
 92:24
recapitalize 16:6 22:1
 94:6
re-capitalize 5:6
recapitalizing 94:9
RECEIVE 1:1 2:4
received 16:24 49:22
 83:10
reckless 2:24
recklessly 3:23
recognize 6:5 11:21 44:3
 78:7
recognized 44:6
recognizes 46:23
recognizing 26:23
recommendation 53:3, 9
 91:8, 13, 17
recommendations 16:20
 86:17 91:21
recommended 91:15
reconvene 96:19
record 5:15 14:19 74:3
 78:11, 21
red 34:6
Redstone 64:18 78:14, 19
reduce 42:19 57:9
reducing 67:14
reduction 53:11
redundancy 33:12 35:18
 42:2
Reed 1:13, 15 2:1, 3 6:1
 7:3 10:1 11:4 14:17
 15:1 16:10 17:9 18:21
 19:1, 12 23:12 27:5 31:6
 34:18 39:8 43:4, 22, 24
 44:1 48:1 51:5 54:9
 58:5 61:16 66:14 70:13,

15 71:16, 20 74:7 78:6,
22 79:2 83:2 87:8, 9
92:9 96:17
reemphasize 60:11
Re-engine 42:23
re-engining 42:21
reentering 20:17
refer 31:22
referenced 76:4
references 25:10
referred 15:19 87:12
referring 47:24
reflects 11:14
refurbishments 72:17
regain 13:4
regard 16:20 22:19, 24
24:12 34:24 35:3 36:6,
16 51:1 75:3
regarding 7:8 15:3, 5
regards 18:8 32:14
region 3:16
regional 28:10
regular 26:25 36:1
60:13 61:7 63:17
regulation 25:19
rehearsed 46:21
reinvigorate 81:7
reiterate 58:16
related 7:9
relates 44:14
Relations 39:19
relationship 38:13 86:23,
24 87:5
relationships 14:7
relative 20:14
relatively 45:11
released 56:17 78:15
89:15
relevance 18:20
reliability 71:4 90:25
reliable 48:15
relied 3:7
relies 37:19 76:7
relieved 72:6
relocate 65:1
relocation 64:11
remain 2:18 11:11 48:24
93:7
remainder 51:4
remaining 61:3 95:18
remains 12:7 13:23
66:21
remanufacture 94:6
remarks 25:4 78:11
Remember 60:1
reminded 58:10 81:22
renewed 79:11
renovations 65:20
repeatedly 22:20 56:20
repeating 8:9

replacement 53:2
report 15:13 43:19 57:23
reported 8:1
reporting 15:13 89:7
reports 48:6 49:16 89:3
repostured 28:24
represent 11:6
representatives 11:19
represented 46:10
REQUEST 1:3 78:8
requested 56:25
require 22:17
required 8:20 15:21
19:5 42:23 53:18 94:16
requirement 76:23
requirements 15:17 19:9
26:9, 14 27:2 28:12
30:10 42:7, 11, 16, 18
96:9
requires 59:24 94:7
rescheduled 52:18 75:7
90:18 91:1
research 81:7, 15
reserve 15:3 43:14, 15
Reserves 11:20 45:10
resilience 13:19, 22 33:12,
13 96:4
resiliency 35:19
resilient 36:23 60:25
72:20
resolve 55:3 68:12
resource 14:14
resources 47:7 72:22
83:13 86:3, 4
respect 4:5 5:3 15:9
44:10 45:6 47:11 64:7
73:16
respected 56:25
respects 17:10
respond 29:19 31:9
34:10 48:21 49:2, 5
52:11
Responding 12:1
response 24:21 82:1
88:7 95:16
responses 26:7
responsibilities 12:4 72:2
responsibility 26:15 56:5
responsible 4:11 24:3, 12,
15, 24 26:13 82:15
responsive 72:20
rest 49:13 55:9 94:10
restore 60:22
rests 8:10
result 46:20 67:12 80:25
resulting 44:7
results 57:11 89:13
retaining 4:20
rethink 29:8 45:4 47:14
return 5:14 15:8, 19

70:19
reverse 78:1
reverse-engineer 60:3
REVIEW 1:3 16:11, 22
23:5 33:9 47:17 54:14,
21, 23 55:15, 17, 19, 23
56:2, 17, 22 57:18 66:21
67:10, 12 89:12 90:1
95:8
reviewed 43:18
reviewing 56:17
rewritten 44:19
RHODE 2:2 71:18
Richard 2:5, 8 4:22 6:5
7:1, 3 9:12 15:2, 12
16:18 19:15, 18, 21 20:3,
25 21:17, 23 22:22 23:2
26:4, 12 28:23 29:20
30:20 34:7, 9, 13, 23 35:7
36:17 39:11 40:5, 22
42:5, 14 44:6, 11 45:6
47:10, 16 48:4, 5, 22 49:1
51:10 52:17 53:14, 25
54:12, 13, 24 55:16 56:1,
5, 10, 15 57:17 58:4, 16,
18 59:17 60:17 61:19
67:3, 7, 20 68:21 69:18
70:10, 17, 24 71:23 72:3
73:12, 14 74:11 77:18
81:3, 12 82:3, 10 83:7, 15
84:6, 8, 14, 24 85:5 87:11,
19 88:13, 24 89:10, 16
90:11, 15, 18, 22 91:6, 18,
20 92:16, 18, 24 93:9, 15
94:3 95:2, 11 96:7
right 7:7, 15 8:20 15:15
17:3 18:14 24:4 25:20
26:1, 21 29:2 30:10
32:24 38:5, 10 40:13
44:15 45:12, 25 46:4, 11,
25 47:8, 9 49:12, 15 51:3
57:20 62:5 63:10 65:23
66:9 69:7, 21 70:9 73:18
74:14 77:3 80:5 82:20
84:3, 6 89:2 90:21 92:15
93:4, 6
rightly 7:19
rigorous 56:21
rigorously 55:24
risk 25:12 67:4, 17
77:25 78:1 89:23
risks 68:11
Robert 43:7
robust 60:25 94:7
robustly 47:4
rocket 52:23 59:18
role 19:22 23:18 24:10
25:20 26:10 41:14 42:11
55:24 57:10 66:23 70:19
88:14
Room 1:13 20:21

Rosen 1:17 70:14, 15
71:21 72:25 73:21 74:7
ROTC 73:23, 25
roughly 96:20
Rounds 1:17 34:19, 20
36:5 37:17 39:6, 8
routine 52:15 90:13
91:9, 24 92:8
routinely 63:23 90:8
run 48:23 90:5
running 54:2
Russia 2:13, 25 3:3, 23
7:8 13:3 15:3 20:15, 18
21:15 31:11, 15 39:20, 22
40:3 41:16 44:9 48:8, 14
49:9, 20 64:3, 7, 9 68:25
73:6 80:15, 25 83:9, 14
84:4 85:10, 13 86:7 90:5,
10 91:5, 24 92:17
Russian 13:1 34:11 48:6,
13 79:10 85:16
Russians 41:5 50:14
Russia's 2:21 49:21 58:9
70:5

< S >
safe 50:25
safety 59:9, 11 62:22
70:20
sailors 7:16 14:15
sanctuary 13:3, 6
SATCOM 39:2
satellite 3:24 12:13, 19,
20, 21 33:10 38:6, 7, 14
41:15 49:17, 19 85:15
satellites 4:17 12:13, 14,
23 33:14 50:6, 10 63:13
satisfied 73:15
satisfy 32:20
saw 12:25 50:13
saying 34:21 77:22 88:22
scale 13:2
scenario 44:17
scenarios 41:20 44:15
Schaefer 43:14
schedule 52:1 53:16 91:2
scheduled 90:14 91:9
school 73:25
scientists 71:3
Scott 1:18 83:3, 4 84:3,
8, 17 85:3, 7, 19 86:2, 6,
18 87:8, 9
screening 61:24 63:5
SD-106 1:13
SDA 13:13, 14, 19, 22, 23
sea 4:16 80:8 89:8
seamless 3:22
seams 2:18 29:23
seas 17:13

second 14:6 33:10 38:16
43:22 49:8 55:6 72:18
84:17 88:6, 17

seconds 34:9 43:23

secret 57:9

Secretary 7:11 8:1 24:1
43:9, 10, 13, 15, 16 55:17,
18, 23 75:10 82:14 87:20
91:19

Security 5:5 8:18 15:7
21:9 36:20 55:25 70:21,
25 71:15, 17 79:14 82:7
87:18 93:24

see 18:3 23:4 32:15
34:7 38:22, 23 40:14, 23
42:18 53:23 57:19 73:4
79:12 82:7 85:3, 16
86:14 89:13 92:21

seeing 29:17 41:24
44:15 49:16 57:23 64:6
68:25 80:13

seen 3:9 8:23 22:5
32:13 44:8 62:10, 12
71:12 80:7 84:12 85:12

segued 41:10

self 44:22

self-detering 90:4 95:16

Semiconductors 80:21

Senate 1:8, 13 11:4
43:20

SENATOR 2:1 5:17
16:18 19:13, 14, 21, 25
20:3, 12, 25 21:4, 23
22:18 23:2, 11, 12, 13, 14,
21 24:18, 22 25:9, 20
26:4, 12 27:3, 5, 7, 8, 14
28:14, 23 29:16 30:14, 20
31:5, 6, 7, 8, 9 32:7, 24
33:15 34:5, 13, 15, 18, 19,
20, 24 35:7 36:5, 17
37:17 39:6, 8, 9, 10 40:5,
19, 20, 21 41:10, 23 42:5,
14 43:2, 4, 18, 21 44:3, 4,
11 45:2, 6, 8, 16 47:5, 10,
16, 25 48:1, 2, 3 49:1, 15
50:11 51:3, 5, 6, 7 52:17
53:10, 23 54:1, 9, 10, 11,
24 55:12, 21 56:5, 8, 12,
16 57:17, 22 58:5, 6, 7, 18
59:8, 17 60:8, 17 61:3, 16,
17, 18 62:23 63:4, 16, 25
65:3, 17 66:3, 5, 8, 13, 14,
15, 16 67:7, 13, 20 68:6,
13, 21 69:8, 18 70:4, 12,
13, 14, 15 71:21 72:3, 25
73:3, 21 74:7, 8, 9 75:2, 9,
13 76:10 77:6, 18 78:4, 6,
7, 9 79:1, 2, 3, 4 80:14
81:3, 12 82:2, 10, 25 83:2,
3, 4, 15, 22 84:3, 8, 14, 17,
24 85:3, 5, 7, 19, 24 86:2,
6, 10, 18, 22 87:8, 9, 10, 11,
19 88:10, 13, 20, 24 89:2,
10, 15, 16 90:3, 11, 13, 16,
18, 19, 22 91:1, 6, 15, 18,
19, 22 92:9, 10, 11, 14, 17,
19, 24 93:5, 10, 12, 15, 18
94:3, 13 95:2, 5, 17 96:6,
13

Senators 1:15

send 52:5, 15 54:3 91:7

sending 92:3, 4

sends 77:10

senior 4:8

sense 31:14 65:19 79:11

sensitive 36:7 51:11

sensor 4:13 17:11 26:6
29:25 30:1, 2 76:12

sensors 4:12, 15, 16
17:12, 18, 23 18:11 19:3,
4 38:25 63:24

separate 35:20 36:2

separation 35:4, 8

serial 20:19 21:10

series 3:2 53:5

serve 26:25

serves 31:17

service 2:9 11:8 19:16
30:6, 9, 12 34:2, 22 39:11
44:5 51:8 52:20 58:13
60:4 70:18 74:10 79:6
86:25 92:12 96:15

servicemembers 11:19

Services 1:9 11:5, 18
15:13 26:7 46:9, 10
60:19 77:19 87:2, 7
96:12

serving 2:10 44:23

session 6:3 7:10 15:4
21:1, 25 28:25 34:14, 16
36:19 44:12 45:7 49:14
51:2 73:11, 20 84:15, 25
85:6 87:23 88:9 90:2
95:3

set 37:14 53:4 66:12

sets 4:21 13:25 68:11

setting 64:13

settle 65:20

seven 43:20

Shaheen 1:16 61:17, 18
62:23 63:4, 16, 25 65:17
66:3, 5, 13, 14

shaken 2:22

shaping 42:11

share 4:14 63:12 64:1

shift 87:24

shifts 7:20

shipments 31:24, 25 32:4

ships 17:22 19:4

shooter 26:6

shot 16:4

show 53:6 57:6 67:12

showing 42:1 94:21

shown 95:19

Shugart 95:19

shuttle 49:24

side 39:20 88:6

signal 19:10 32:21 42:19
53:20 77:9 92:8

signaling 42:25

signals 33:14 41:16
87:24 91:7

signed 80:1 82:15

significant 7:7 13:2 29:7
59:21 71:13 78:16, 18
79:8 87:24

significantly 80:19 88:3

silence 51:14 52:6

silos 3:10

similar 13:3 35:15

Similarly 3:19

simple 35:12

simply 21:5 57:5 94:11

single 5:8 32:2

sir 16:9 29:15 37:17
39:6 49:14 50:20 79:15
80:23 81:9 84:6 90:2, 15
92:18

sit 74:18

Site 70:21, 25 71:15, 17

sites 17:22 71:17

situation 7:25 32:13 92:1

situational 4:13 30:4
63:11

situations 41:22 80:12

size 28:21 62:5 67:14
71:18 96:8

SJ-17 12:25

SJ-21 12:18, 20, 23 41:1

skill 4:20

SLCM 89:9

smaller 89:6

small-scale 25:11

smartest 56:4

so-called 88:10 89:5

socioeconomic 78:16

soldiers 7:16 14:15

sole 22:24 66:19 67:2

solutions 25:19

somebody 63:18

soon 65:10 71:7

sorely 79:13

sort 34:10 41:12

sought 48:15

sounds 30:2 54:19

Soviet 88:25

SPACE 1:2 2:7, 12, 16
3:20, 22, 24 4:2, 4, 12
11:2, 7 12:2, 10, 15, 19
13:2, 4, 6, 7, 9, 10, 12, 13,
15, 19, 21, 22, 23, 24 14:1,
3, 9, 10, 11, 13, 18 17:11,
13, 19 18:4 19:6, 9 23:16,
17, 18, 20 24:19, 24 25:2,
6, 8, 15, 21, 25 27:10, 19,
21, 24 28:10, 11 29:23
30:4 31:23 32:21 33:13
34:3 37:19, 22 38:7, 9, 12,
16, 19, 21, 23 39:1 40:22
41:18, 20 43:17 46:12
49:24 50:7, 10, 13, 22, 24
54:6, 16 61:23 62:9, 16,
21, 24 63:11, 22 65:1
67:15 73:1, 6, 8, 16, 19
75:22 76:2, 7, 15, 16, 20
77:3 78:13 79:18, 25
80:6 82:13 85:8, 11, 22,
25 86:7, 14, 15, 18, 23
87:4, 6 96:1, 5, 11

space-based 18:5

SPACECOM 2:7, 15, 17
4:4, 11, 21 23:18, 22 40:4
41:20 64:11, 16, 21 79:9

SPACECOM's 96:3

space-specific 80:24

spacetrack.org 63:21

speak 59:13 71:23 73:7

speaking 52:13 68:22
72:25 75:17

specialized 4:20

specific 19:11 63:5 91:20

specifically 34:25 70:21

specifics 59:24 60:18
77:19

spectrum 82:5, 6, 12, 20

speed 18:19 26:6 69:23

spend 49:25 64:15 65:1

spending 57:7, 11 74:23
88:21

sphere 51:23

spoken 60:9

spread 48:15

Springs 38:18

stability 2:23 3:16 22:8
36:16 37:9, 10 58:11
70:9

stable 3:4 60:9, 10

staff 11:24 69:19

staffing 64:15

staggering 57:11

stake 68:10

standard 26:25 35:24

standards 82:17

standing 17:6

standpoint 85:17

stands 2:17 13:7

stand-up 4:19

Starlink 41:15, 25

START 4:24 20:7 24:8,
10 92:13 94:6, 8

started 27:23, 25

starting 22:7

<p>State 20:4 24:9 71:18 93:23 stated 7:19 80:15 88:2 STATEMENT 2:1 5:15, 17 7:1 9:12 11:1 14:19, 21 45:18 69:9 79:7 80:1 81:4 86:11 87:12 statements 3:2 41:1 84:9 STATES 1:2 3:4 7:2 11:2, 7 13:8 14:4 19:18 20:16 21:8, 16 22:23 25:21 49:9 66:21, 24, 25 94:17 static 47:21 station 41:6, 7 50:22, 25 62:21, 24 75:22, 23 76:7 stations 41:14 statistic 62:7 statutorily 15:21 stay 53:16 65:19 steadily 11:13 steady-state 22:12 stealing 33:14 STEM 46:6 73:24 74:1 steps 37:23 60:22 Stewardship 71:1, 24 72:4, 14 stockpile 69:25 71:1, 4, 10, 24, 25 72:4, 11, 14, 15 stood 27:19, 22 33:15 62:8 80:5 stop 69:16 Storch 43:7 story 15:18 STRATCOM 2:6, 15 4:5 37:8 40:4 44:17 48:24 51:12, 16 52:1 54:25 55:16 81:4, 13 STRATCOM's 9:9 42:11 71:25 STRATEGIC 1:2 2:6, 13, 16 4:8 7:2, 12, 13, 17, 18 8:2, 11, 12, 18, 21 22:17 28:17 29:7 30:22 34:10 35:10 37:2, 9 46:24 49:8 54:22 55:14 56:24 61:6 66:20 69:9 70:9 81:11 83:19 92:21 93:7, 9, 17, 22 strategically 30:24 strategies 45:13 47:18 strategists 94:21 strategy 8:20 13:12, 24, 25 14:5 16:14 19:17 29:3 45:19 46:25 47:12, 19 53:18 55:25 57:10 80:11 82:14 87:25 88:4, 5, 15 stream 96:10 streamline 26:2</p>	<p>strength 45:9, 12, 17, 20, 23 47:6 52:7 54:19 strengthening 14:6 stress 8:22 strike 88:12 95:20 96:1 strikes 94:17 strong 51:15 stronger 36:23 strongest 74:12 strongly 55:4 structural 34:4 structure 31:4 34:6 study 57:6 78:15, 18, 21 stuff 60:19 stunted 25:12 subcritical 71:3 submarines 8:24 submit 14:19 21:14 74:3 78:20 submitted 5:15 subsequently 24:8 subset 26:17 substantial 12:6 substituted 67:16 sufficient 31:23 47:5 82:19 86:20 suggest 57:17 suggested 21:13 89:3 suggesting 33:8 suggestion 34:8 74:18 superiority 13:13 76:3, 9 82:14 supplemental 95:7 supplied 80:24 supply 60:15 80:20 support 7:12 11:10 14:9, 17 42:8 55:5 56:22 73:13 82:19 96:3 supporting 5:9 9:7 supports 93:24 sure 4:4 18:17 24:25 26:21 27:1, 13 30:15 33:17 36:12 45:14 49:5 50:23, 24 56:3 60:12 62:20 65:4, 16 66:10 82:17 87:15 95:13 surrender 94:18 sustain 13:21 53:1 93:22 Sustainment 43:11 60:1 SVC-217 6:3 96:19 switch 63:25 95:17 switching 94:14 synchronize 27:11 synthesized 18:17 system 53:2 59:2, 19, 20 60:4 70:7 71:7 75:25 80:17 88:16 systems 21:20 23:18 26:11, 14, 18 35:1, 2, 6, 20 36:8 49:17, 19 53:20</p>	<p>58:21, 25 59:5 60:24 73:19 85:9 89:4 < T > table 31:14 39:21 79:23 tactical 30:23 34:12 Taiwan 94:18 95:22 take 17:14 26:21 40:2 46:18 53:10 58:12 60:22 64:17, 21 65:20, 22 68:10 77:21 82:12 86:17 88:6 89:23 taken 37:24 73:17 takes 30:16 49:7 talent 45:25 46:21 talk 24:7 31:20 36:11 42:11 45:9 62:5 73:1, 8, 22 74:2 75:19 85:20 87:22 talked 30:25 39:12 42:7 64:2 76:3, 4 77:7 talking 24:8 52:23 68:7 72:19 76:9 87:20 90:23 93:14 talks 20:15 tangible 44:6 84:12 tanker 42:7, 12, 15, 23 tankers 42:8 target 50:10 targeting 48:8 targets 67:17 Task 38:19 tasking 4:12 tasks 17:12 team 11:8, 25 20:7 34:6 86:25 teams 27:24 teamwork 12:2 technical 20:5 46:6 56:9, 11, 13 57:1 78:1 88:15 Technically 30:1 techniques 46:22 technologies 80:24 technology 25:14 59:15 76:7 tell 19:20 30:18 35:13 39:21 40:1, 6 55:18 67:9 69:18 86:14 telling 38:23 tend 37:8, 11 50:2 tenets 24:2, 6, 12, 23 25:7 term 87:13 terms 16:13, 25 18:3 19:22 23:24 24:14, 15 25:24 26:2 27:21 29:18 32:12 33:12, 13 36:12 37:7, 8 38:13 42:2, 18 45:21 46:5 53:19 62:19 63:1 64:14 73:12, 14 76:18 79:22 82:7 86:1,</p>	<p>14, 25 terrestrial 17:24 18:2 terrestrial-based 77:2 territory 45:4 test 12:17 13:5 50:15, 19, 20 51:24 52:15, 18, 19, 20 62:12 90:7 91:4, 17 tested 49:10 testified 16:19 22:22 23:2 54:13 69:23 71:12 93:5 94:19 testify 2:15 7:4 testifying 70:17 92:14 testimonies 5:12 TESTIMONY 1:1 2:5 8:4 57:21 58:20 61:20 71:14 79:6 92:20 93:19 96:14 testing 72:7 85:18 91:2 92:8 tests 12:16 40:25 49:23 52:1 90:9, 10, 19, 23, 24 91:24 thank 2:8 5:11 7:11 9:11 10:1 11:4 14:16 15:1 16:10 17:9, 16 19:12, 14, 15 23:11, 12, 14, 21 26:4 27:3, 5, 8, 14 28:14 30:14 31:5, 6, 8 34:16, 17, 18, 20, 21 37:17 39:6, 8, 10 43:2, 4 44:1, 4, 5 45:2, 8, 15 47:25 48:1, 3, 4 49:15 50:11 51:3, 5, 7, 8, 20 54:8, 9, 11 57:16, 20 58:5, 7, 12 61:15, 16, 18, 19 62:4 66:13, 14, 16 67:13 70:12, 13, 15, 16, 18 71:20 72:25 73:10, 21 74:6, 7, 9 76:10 78:4, 5, 6, 9 79:1, 2, 4, 5, 6, 19 82:25 83:2, 4, 5 85:7 87:8, 9 90:3 92:9, 11, 12 94:13 96:6, 14, 16, 17 thanks 2:9 27:8 74:9 theater 29:7 30:23 94:21 95:1 theirs 36:14 theory 44:20 thing 20:10 25:1 86:1 things 13:17 27:22 32:12, 23 53:15 55:8 62:10 66:7 72:4, 13 73:14 75:5 85:3 96:3 think 8:8 17:3 21:6 22:14 24:13, 23, 24 25:1, 23 27:17 30:20 31:3 32:11, 19 35:5 36:17 37:5, 12, 15 39:15, 23 41:24 44:14, 23 45:9 47:22 48:10 51:18 52:3, 12 56:8, 12 61:11 68:16,</p>
---	---	--	--

<p>23 69:4, 12 70:1, 2, 11 72:8 74:23 75:11, 23 76:4, 11 77:6, 19 79:11, 14, 20 80:19 81:18, 21, 23, 25 83:25 84:3 85:24 88:20 91:9, 11 92:7 93:6, 14 95:14</p> <p>thinking 40:10 69:3 84:16 93:6</p> <p>third 4:24 14:7</p> <p>Thomas 95:18</p> <p>thought 28:3 34:15 44:25 69:4</p> <p>thoughts 29:18</p> <p>thousands 33:6</p> <p>threat 3:20 29:6, 18, 21 48:21 52:11 58:10, 11, 21, 23 59:6, 8 66:19 88:8 89:20, 21 93:3 94:12</p> <p>threaten 94:16</p> <p>threatened 21:16</p> <p>threatening 37:3 50:21</p> <p>threatens 23:17</p> <p>threats 4:1 12:1 21:2 22:4 28:20, 22 29:7 35:25 47:13, 14, 23 49:2 67:3 68:13, 15, 18 70:6 73:5 92:22 93:22</p> <p>three 3:9 14:5 21:23 39:16 46:16 66:1 72:22 80:4</p> <p>three-party 8:18 22:8, 9 37:13 39:15 81:15</p> <p>threshold 93:13 95:14</p> <p>Tillis 1:18 44:3, 4 45:2, 8 47:5, 10, 25 48:1</p> <p>time 7:24 8:6 15:17 16:5 21:18 22:11 27:12 28:16, 18 29:10, 12, 18 40:10 48:16, 21 49:6, 25 51:4, 19 52:4, 12 54:2 61:3 65:1, 17 67:1 69:5, 19 70:8 73:22 90:12 92:22 95:18 96:13</p> <p>timeline 26:3 45:12</p> <p>times 8:23 29:14 51:13 71:8</p> <p>today 2:4 5:11, 13 7:4, 21 9:10 11:5, 10 12:14 14:13 20:14 22:21 27:9 29:3 36:24 40:12 49:25 50:19 51:9, 22 58:8 61:12 62:9, 15 65:25 66:17 70:17 73:16 76:18 79:5 80:13 86:5 87:12 92:25</p> <p>today's 3:25 8:19</p> <p>told 20:14 44:22 57:3 69:18 94:14</p> <p>tools 13:21</p>	<p>top 13:23 22:10 25:5 59:1</p> <p>topic 64:1</p> <p>total 12:13</p> <p>totally 65:2</p> <p>touched 96:7</p> <p>tough 57:14</p> <p>tour 83:16</p> <p>TPY-2s 17:21 19:4</p> <p>track 15:14 50:17, 19 62:11 73:25</p> <p>tracked 62:8</p> <p>tracking 50:16</p> <p>trade 31:22</p> <p>traditionally 17:18 18:1 19:5</p> <p>trained 66:10 69:3</p> <p>training 91:12</p> <p>transaction 25:16</p> <p>TRANSCOM 42:6</p> <p>transition 2:19 25:10</p> <p>treat 84:20</p> <p>treated 67:4</p> <p>treaties 20:4</p> <p>treating 85:8</p> <p>Treaty 4:24 19:23 20:7</p> <p>tremendous 62:10</p> <p>triad 3:12 4:25 5:2 9:6 15:6, 14 22:1 42:9</p> <p>tried 16:6 35:21</p> <p>trillions 74:23</p> <p>trip 76:11</p> <p>troubles 58:3</p> <p>troubling 21:6</p> <p>true 57:5 88:14</p> <p>try 35:5, 7 36:7</p> <p>trying 7:14 37:6 41:16 45:24 63:16 64:16 70:7 85:20 91:6</p> <p>Tuberville 1:19 27:7, 8 28:14 29:16 30:14 31:5, 6 78:7, 9 79:1, 2</p> <p>Tuesday 1:6</p> <p>turn 31:19 90:7</p> <p>TV 32:15</p> <p>two 7:21 8:6 11:23 21:13 22:3, 6, 14 26:18 28:17, 20, 22 29:20 31:22 34:2 35:3, 4, 17, 20 36:12 38:4, 17 39:1, 16 42:18 46:10 48:19 52:12 65:3, 7 68:14 72:13 75:24 83:8, 20 87:21 89:4 92:5</p> <p>two-party 37:11 39:14</p> <p>type 32:22 46:6 77:2</p> <p>types 23:25 73:18</p> <p>< U ></p> <p>U.S 1:8 2:1, 5, 7 7:17 8:16 12:1 13:6, 9, 12, 23, 24 14:9, 10, 13 19:9</p>	<p>21:21 27:19 28:21 32:21 48:12, 23 50:6, 7, 10 66:22 73:6 80:6, 16 85:8 89:19</p> <p>U1a 71:2, 6, 24</p> <p>UARCs 81:18</p> <p>UEWRs 17:25</p> <p>Ukraine 2:21 7:7 15:3 21:17 31:21 32:13 34:12 41:15 58:9 64:9 73:4, 9 79:10 92:3, 6</p> <p>Ukrainian 3:25 48:6</p> <p>Ukrainians 49:18</p> <p>ultimate 18:10</p> <p>ultimately 16:23 49:20 76:21 95:16</p> <p>unanimous 78:8</p> <p>unarmed 90:9</p> <p>unchanged 23:3</p> <p>unclassified 51:23</p> <p>unclear 44:16</p> <p>undergoing 4:22 71:6</p> <p>underground 71:2</p> <p>undermine 70:8</p> <p>underpin 8:15</p> <p>underpins 72:12</p> <p>underscores 80:20</p> <p>understand 3:14 5:9 14:1 15:24 16:9 25:1, 2, 7 37:15 40:18 48:12, 22 51:11, 12 52:24 55:6, 13 58:15 64:17, 24 68:24 69:4 72:8 75:13 87:16</p> <p>understanding 13:17 18:3 28:19 42:8 61:24 64:20 68:18 77:25 82:11</p> <p>understands 49:6</p> <p>understood 37:4</p> <p>undertaking 3:15</p> <p>underway 15:23 62:1</p> <p>Unfortunately 58:9 71:16</p> <p>unified 12:4</p> <p>unilaterally 7:22</p> <p>uninterrupted 18:22</p> <p>Union's 88:25</p> <p>Unit 62:17 63:22</p> <p>UNITED 1:2 3:4 7:2 11:2, 7 13:8 14:4 19:18 20:16 21:8, 16 22:23 25:21 49:9 66:24, 25 94:17</p> <p>universal 67:1</p> <p>unjust 79:10</p> <p>unlimited 15:22</p> <p>unprovoked 2:21 58:9</p> <p>update 62:1</p> <p>updated 63:17</p> <p>updates 63:22</p> <p>upgrade 59:15</p> <p>upgraded 62:18</p>	<p>upgrades 70:22 71:24 76:21</p> <p>uphold 3:18</p> <p>uranium 5:6</p> <p>urge 34:5</p> <p>urgency 64:1, 12, 24</p> <p>use 13:9 16:13 17:19 23:19 25:16 30:11, 24 31:1, 3 32:22 34:11 35:17 37:8 44:16 49:12 55:1 61:2 62:15, 18 68:4 69:1, 5 84:10 86:7 87:3 88:11 89:1 94:17 95:10, 11, 15</p> <p>usually 39:20</p> <p>utilize 38:24</p> <p>utilizing 46:14</p> <p>utmost 4:9</p> <p>< V ></p> <p>valid 36:20</p> <p>valley 25:9</p> <p>value 11:8 94:23</p> <p>Vandenberg 38:9, 12 62:16 63:22 78:13, 17</p> <p>variables 74:19</p> <p>variety 56:3, 13</p> <p>varying 42:9 74:19</p> <p>vast 71:21</p> <p>vehicle 12:17</p> <p>venture 52:8</p> <p>venue 51:17</p> <p>verify 71:3</p> <p>versa 37:4</p> <p>versatile 12:8</p> <p>version 80:5</p> <p>versus 35:1, 6 65:21</p> <p>viable 90:21</p> <p>vice 37:4</p> <p>view 24:19 25:16 26:8 34:9 48:16 57:9, 25 58:1</p> <p>viewed 48:10</p> <p>viewing 50:8</p> <p>views 5:4 56:3, 7, 13 67:19</p> <p>violence 7:23 55:4</p> <p>visibility 63:3</p> <p>vision 4:15 80:1</p> <p>visited 71:8 75:21</p> <p>vital 11:21 19:16 73:19 82:7</p> <p>vivid 17:3 95:3</p> <p>Vladimir 2:24 20:19 21:7 92:6, 21</p> <p>Von 42:6</p> <p>< W ></p> <p>waiting 65:13</p> <p>walk 40:14</p> <p>want 2:8 7:11, 15 16:3 17:5 20:23 31:3, 20 37:7</p>
---	---	---	---

45:8 49:5, 25 51:10
 52:19 54:3, 24 56:22
 57:6 59:4 61:21 63:25
 64:8 65:18 70:19 73:22
 75:2, 19 83:5 89:17 90:7,
 24 91:4
wanted 31:9 60:11 89:4
wanting 79:23
wants 95:9
war 20:20 21:11 31:20,
 21 32:1 37:11 41:20
 48:10 49:10 73:8 81:24
 94:5, 18
warfighter 25:14
warfighting 85:8
warheads 69:11
warn 4:7 75:25
warning 4:6 17:19 18:2
 29:22 30:4 75:25 76:13,
 15 77:4
warranted 93:2
Warren 1:16 54:10, 11
 55:12, 21 56:8, 12, 16
 57:22 58:5
Washington 1:10
waste 25:13
watch 32:3 70:1 75:4
 96:20
watching 32:10, 14 84:8
 87:16
way 15:16 18:23, 24
 22:4, 5 23:8 27:19 30:3
 41:12 44:23 49:12 53:10
 56:2 61:7 70:10 77:24
 78:1, 3 89:24 95:12
ways 29:20 39:17 59:10
 81:9
weaken 92:22
weapon 19:24 29:1
 31:11, 12 34:12 35:1, 2, 6
 59:19 60:4 68:2 90:22
weapons 9:4, 7 15:18, 24
 22:2 23:16, 19 36:8
 52:20 54:18 55:25 57:3,
 10, 13 59:4 60:23 66:23
 67:2, 16 71:7 72:7, 10
 84:10, 22 87:13 89:5
 90:5 94:23 95:10
website 63:21
week 5:14 42:6 90:17
weekend's 51:23
weeks 13:1 32:14 74:24
 80:2 92:5
weight 31:16
well 7:13 17:11, 22
 20:12 23:2 24:22 25:2
 37:4, 5 41:9 46:1 48:20
 52:25 57:23 59:9, 15
 61:11 63:9, 16 68:12
 73:10, 16 74:4 75:1, 16,

20 76:2, 9 82:2, 9 85:24
 86:10 87:4 90:14 96:1
well-designed 59:2
Western 95:24
Whiskey 89:8
Wicker 1:17 19:13, 14,
 25 20:12 21:4 22:18
 23:11, 12 31:10 43:21
wide 54:15 56:3, 7
widespread 57:25
wild 90:5
willing 68:10 84:22
 85:22
willingness 45:3 50:9
 80:7
winds 95:16
wins 68:9
wise 69:15
withheld 81:1
withstand 35:25
witness 3:7
witnessed 7:21 13:1
witnessing 7:19
women 2:10 11:6
wonder 41:17
wonderful 51:17
wondering 76:6
word 32:24
words 32:19, 25 54:16
 65:9 68:23 84:21
work 8:14 11:12 15:23
 18:7, 12 20:1 22:8 23:22
 26:9 30:10 36:24 37:15
 38:5 42:3 50:22 55:10
 60:12 62:20 63:8 72:14
 74:16 76:20 79:21 80:7
 82:17 93:16
worked 26:5 27:13
 29:24 45:20
workforce 59:12, 23
 61:10 73:2, 22 74:3
working 13:3 16:9, 11
 18:9 23:25 24:4 28:1
 46:3 61:13 76:24 79:24
 80:9 82:8 87:2
works 22:9, 11 37:16
 38:19
world 7:20 17:21 18:1
 35:21 38:22 46:22 71:8
 74:21 79:10, 16, 24
worldwide 7:23
worried 40:8
worry 39:21
worst 35:25
worth 8:8
wrote 93:19

< Y >
Yeah 45:15
YEAR 1:4 3:5, 9, 19
 15:21 28:16 38:17 51:25

54:13 55:21 56:20 64:17
 75:24 76:11 87:21 89:3
 96:3
YEARS 1:4 4:2 12:13
 17:17 18:9 21:20 22:5
 26:5 27:17 38:2, 9, 18
 44:17, 20 45:22, 23 46:16
 47:14 49:23 50:17 59:10
 60:5 64:16 66:1 72:17
 74:20 76:5, 12 79:17, 21
 84:16 85:13 94:8 96:5
yield 51:3 61:15
yields 89:6
young 46:6
youngest 73:24