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Before the

Subcommittee on Airland

COMMITTEE ON
ARMED SERVICES

UNITED STATES SENATE

ARMY MODERNIZATION

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HEARING TO RECEIVE TESTIMONY ON ARMY MODERNIZATION

Wednesday, February 7, 2018

U.S. Senate
Subcommittee on Airland
Committee on Armed Services
Washington, D.C.

The subcommittee met, pursuant to notice, at 3:35 p.m. in Room SR-222, Russell Senate Office Building, Hon. Tom Cotton, chairman of the subcommittee, presiding.

Subcommittee Members Present: Senators Cotton [presiding], Wicker, Sullivan, Sasse, King, McCaskill, Donnelly, Warren, and Peters.

1 OPENING STATEMENT OF HON. TOM COTTON, U.S. SENATOR
2 FROM ARKANSAS

3 Senator Cotton: The hearing will come to order.

4 Good afternoon, everyone. This is the first hearing
5 of the year. Today, we will be talking about Army
6 modernization. It is an important topic in its own right.
7 We always want to make sure our men and women in uniform
8 have the best arms and equipment on the battlefield, but it
9 is also an opportunity to think about the long-term because
10 we cannot arm ourselves against the threats of the 21st
11 century until we are clear about what those threats are.

12 And here, I want to say the National Security Strategy
13 and National Defense Strategy got it just about right. We
14 are in an era of renewed great-power competition, which
15 means Russia and China are the gravest threats we face
16 today.

17 Now, is Islamic terrorism still a threat? Yes, of
18 course. The development of Iran and North Korea's nuclear
19 programs, are those deeply alarming? Yes, they are. But
20 China and Russia are building advanced new weapons systems
21 to rival our own capabilities, and in some cases, we are
22 already falling behind those countries, and it would be
23 much worse were they to ally against us.

24 Two years ago, Lieutenant General H.R. McMaster told
25 this committee the Army was already outranged and

1 outgunned, so just imagine what has happened in the last 2
2 years. I am glad to see the Army has made progress on some
3 of these challenges.

4 Since last October, Army leadership, especially Deputy
5 Secretary McCarthy, have taken great strides in improving
6 our acquisition policy. They have announced a
7 modernization command. They have created several cross-
8 functional teams to manage key programs. This is all very
9 good. I know the committee would very much like to hear
10 more about the status of some of these programs, in
11 particular, long-range fires, integrated mobile air
12 defense, next-generation ground combat vehicles, the future
13 of vertical lift, mobile communication networks, the
14 Distributed Common Ground System-Army, active protection
15 systems, and alternative force designs. Now, we certainly
16 want to hear about programmatic timelines. We are
17 especially interested in figuring out how we can get these
18 capabilities into the hands of our soldiers.

19 The National Defense Authorization Act asked the Army
20 to come up with a strategy for modernization, so we want to
21 know, what is that strategy? What do you think the
22 battlefield of tomorrow looks like? What does mobile
23 combined arms maneuver look like in 10 years? How can we
24 integrate the Army within the joint force battle space?

25 To help answer these and other questions, we are

1 joined today by a panel of distinguished general officers,
2 Lieutenant General Joe Anderson, the deputy chief of staff,
3 G-3/5/7; Lieutenant General John Murray, deputy chief of
4 staff, G-8; Lieutenant General Paul Ostrowski, the
5 principal military deputy to the assistant secretary of the
6 Army for acquisition, logistics, and technology, and the
7 director of Army Acquisition Corps; and Major General
8 Robert Dyess, acting director of the Army Capabilities
9 Integration Center.

10 Gentlemen, thank you all for being here. We look
11 forward to your testimony.

12 Senator King?

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1 STATEMENT OF HON. ANGUS KING, U.S. SENATOR FROM MAINE

2 Senator King: Mr. Chairman, thank you for holding
3 today's important hearing. I would also like to welcome
4 our witnesses. I look forward to your testimony and deeply
5 appreciate your service to our country.

6 Last month, as the chairman noted, Secretary Mattis
7 released the National Defense Strategy that focused on the
8 reemergence of long-term strategic competition, a major
9 change in our strategy, the central challenge now facing
10 the United States. To that end, countering the threat that
11 is posed by China and Russia is now the primary focus for
12 the Department, and this threat is substantially different
13 in many, many ways from the counterterrorism fight that our
14 military has been engaged in for the past 16 years.

15 With the refocus on great-power competition, we have
16 to ensure that our soldiers are trained and equipped for
17 conflict across the full spectrum of operations. As such,
18 today's subcommittee hearing on Army modernization is
19 timely and necessary.

20 I want to say from the outset that I want to commend
21 the senior leadership of the Army for the recent efforts to
22 ensure that the Army delivers new technology and platforms
23 to the force in a more effective and timely manner. Under
24 the leadership of Secretary Esper, Secretary McCarthy,
25 General Milley, and General McConnell, the Army is pursuing

1 a new modernization strategy focused on six major
2 modernization priorities that the chairman mentioned, long-
3 range precision fire, next-generation combat vehicles,
4 future vertical lift, upgraded mobile communications
5 network, enhanced air and missile defense capabilities, and
6 improved soldier lethality.

7 To support this effort, the Army has established
8 cross-functional teams designed to break down acquisition
9 stovepipes and expeditiously field new weapons systems
10 expeditiously. I emphasize that term. While effective
11 modernization strategies are always critical to the success
12 of our soldiers, the current effort by the Army is vitally
13 important in supporting the new National Defense Strategy.

14 If U.S. forces become engaged in a future fight with a
15 peer adversary, it is likely they will face serious anti-
16 access/area-denial threats, advanced weapons technology, as
17 well as hybrid warfare tactics. As this committee
18 continues to review our National Defense Strategy and
19 begins evaluating the FY19 budget request in the coming
20 weeks, I hope our witnesses today will address what
21 modernization investments they believe are necessary to
22 ensure the Army prevails against our most capable
23 adversaries.

24 Fielding new weapons platforms and upgrading existing
25 systems, however, while critical to our national security,

1 is not the only way to deter our adversaries. We must
2 always also acknowledge that our competitors are capable of
3 causing great harm to our country without directly engaging
4 our forces in combat. For example, Russia interfered in
5 our most recent presidential election, and continues to try
6 to influence our domestic politics, while at the same time
7 it redraws boundaries in Eastern Europe, destabilizes its
8 neighbors, and undermines democratic values. Therefore, as
9 the Army pursues its modernization strategy, I want to know
10 from our witnesses if the Army is considering different
11 operational concepts about warfare in the future given the
12 new emphasis on great-power competition.

13 In addition, resources are not unlimited. The Army
14 has to prioritize investments and make tough allocation
15 choices. Due to the spending caps driven by the Budget
16 Control Act and the lack of predictability provided by 2-
17 year budget deals, which we devoutly hope we will have in
18 the next 24 hours, the Army has focused on rebuilding full-
19 spectrum readiness and maintaining end-strength levels. I
20 welcome any comments from our witnesses on how the Army
21 plans to balance restoring readiness while ensuring our
22 soldiers have the capabilities necessary to fight future
23 battles against advanced adversaries.

24 Finally, expanding the competitive space against our
25 adversaries cannot be accomplished solely by the Department

1 of Defense. The National Defense Strategy is explicit on
2 this point, stating that it requires the combined actions
3 of the U.S. interagency to employ all dimensions of
4 national power. Therefore, as this committee considers the
5 FY19 budget request for defense, we must remember that
6 increased defense spending should be complemented by
7 increased spending in other core elements of national
8 power. We need an effective Department of State, Central
9 Intelligence Agency, Department of Homeland Security,
10 Department of Justice, and other agencies that can ensure
11 our strategy is capable of countering our adversaries and
12 accomplishing our national objectives.

13 Thank you, Mr. Chairman, for calling this hearing. I
14 look forward to hearing from our witnesses.

15 Senator Cotton: Thank you, Senator King.

16 Gentlemen, we have received your written statement.
17 We will enter that into the record. I understand now that
18 you each have a brief testimony as well. We will start
19 with Lieutenant General Anderson and move down the row.

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1 STATEMENT OF LIEUTENANT GENERAL JOSEPH ANDERSON,
2 DEPUTY CHIEF OF STAFF, G-3/5/7, UNITED STATES ARMY

3 General Anderson: Thanks, Chairman Cotton, Ranking
4 Member King, and distinguished members of this committee.
5 Thanks for the opportunity to testify on the state of the
6 U.S. Army. I appreciate your support and demonstrated
7 commitment to our Army and look forward to discussing with
8 you the ongoing need to invest in Army modernization and
9 its critical relationship to building and maintaining
10 readiness.

11 My experience has allowed me to witness significant
12 lasting detrimental effects to Army readiness and
13 modernization caused by the Budget Control Act and
14 continuing resolutions. The abrupt implementation of FY13
15 sequestration significantly impacted every aspect of our
16 Army. Sequestration compelled the Army to take drastic
17 measures in training and readiness and delayed
18 modernization. Continuing resolutions compound resourcing
19 solutions and greatly affect the Army's ability to generate
20 readiness and execute our modernization strategy.

21 Last year, I discussed that our competitors were
22 studding our doctrine, making revisions to their own, and
23 rapidly modernizing their militaries, all of which threaten
24 America's interests. Today, the United States Army remains
25 second to none, but while we have been building short-term

1 readiness to remain engaged in counterterrorism and
2 stability operations, our adversaries have made significant
3 gains, which means that overmatched concerns persist, as
4 you both just mentioned. We now face the prospect of
5 fighting threats in complex anti-access/area-denial
6 environments. The forces our adversaries are building
7 often rival and in a few instances surpass our current
8 capabilities.

9 Failure to modernize will undoubtedly intensify the
10 significant risk to our Army. Modernized force structure
11 and operating concepts are critical to the Army's ability
12 to employ equipment effectively to meet our nation's
13 threats. This will ensure a trained and ready Army that
14 has capable capacity to meet current and future challenges
15 and prevail against the full range of military operations.
16 Modernization ensures the readiness of the total force on
17 future battlefields and the conflicts against near-peer
18 adversaries.

19 The Army invested additional end strength authorized
20 by the FY17 NDAA to increase personnel levels for deploying
21 units. We also added a small number of units to fill
22 capability gaps to help meet combatant commanders'
23 operational and contingency demands. We are piloting new
24 operating concepts such as multi-domain battle and cyber
25 force teams that will make our combat formations more

1 capable on the modern battlefield. The Army will continue
2 to apply additional end strength if authorized in FY18 to
3 readiness and critical shortfalls like security force
4 assistance, air defense, long-range fires, and additional
5 cyber capabilities.

6 Readiness remains our number-one priority, but
7 modernization is a priority as well. Operating under
8 continuing resolutions and the looming pressures of
9 sequestration affects readiness, increases risk, and
10 creates delays in getting American soldiers the weapons and
11 tools they need to fight and win our nation's wars. Stable
12 and predictable long-term funding is necessary if the Army
13 is to continue to build and sustain current readiness while
14 shaping the future force.

15 We thank you for the unwavering support of our
16 outstanding civilians and the men and women in uniform and
17 the families who support them. I look forward to answering
18 your questions. Thank you.

19 [The prepared statement of General Anderson follows:]

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1 Senator Cotton: General Murray?
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1 STATEMENT OF LIEUTENANT GENERAL JOHN M. MURRAY,
2 DEPUTY CHIEF OF STAFF, G-8, UNITED STATES ARMY

3 General Murray: Chairman Cotton, Ranking Member King,
4 and distinguished members of the Subcommittee on Airland.
5 On behalf of the Army Secretary, the Honorable Mark Esper
6 and our Chief of Staff General Mark Milley, we all very
7 much look forward to discussing Army modernization with you
8 today and addressing some of the issues you raised in your
9 opening statements.

10 The Army has reached an inflection point, and it is
11 the same thing I told you last year, that we can no longer
12 afford to choose between near-term readiness and
13 modernization. And specific to modernization, we can no
14 longer afford to choose between incremental upgrades to
15 existing equipment and developing new capabilities. We
16 have definitely reached a point where we have got to be
17 able to do both. The Army's focus on the demands of
18 ongoing campaigns combined with constrained resources and
19 an industrial-age organizational model have slowed,
20 deferred, and in some cases halted the development of new
21 capabilities.

22 Meanwhile, as General Anderson mentioned, our
23 adversaries have or are quickly attaining a competitive
24 advantage. We believe that the President's commitment to
25 restoring the military will be clearly evident in the

1 budget request, especially in regards to Army readiness and
2 modernization. If appropriated, we believe it will be a
3 very good start towards reversing the historical and
4 significant shortfalls in modernization funding. However,
5 one year will not by itself reverse the trend. We must
6 have sustained, predictable, and adequate funding over the
7 long term to allow us to develop an effective plan to
8 reduce current and future risk, while making the most
9 effective use of the valuable resources entrusted to us.

10 In fiscal year 2019, we plan to selectively upgrade
11 the equipment that is critical to near-term readiness,
12 focus our science and technology and research development
13 test and evaluation funding on the six Army modernization
14 priorities you mentioned, and begin the development of the
15 equipment we will need to regain and sustain overmatch
16 against a peer threat. The American people expect their
17 Army to win, and meeting this expectation requires that the
18 Army regain and maintain overmatch against any peer threat.

19 We urge Congress to provide fiscal stability at a
20 sufficient level so that we can maintain our current
21 warfighting readiness, while simultaneously building a more
22 modern and capable force for the future. I would like to
23 thank you and the entire committee for your unwavering
24 support of the men and women of the United States Army, our
25 Army civilians, and our families. Thank you, and I look

1 forward to your questions.

2 [The prepared statement of General Murray follows:]

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Senator Cotton: General Ostrowski?

1 STATEMENT OF LIEUTENANT GENERAL PAUL A. OSTROWSKI,
2 PRINCIPAL MILITARY DEPUTY TO THE ASSISTANT SECRETARY OF THE
3 ARMY (ACQUISITION, LOGISTICS, AND TECHNOLOGY) AND DIRECTOR
4 OF THE ARMY ACQUISITION CORPS

5 General Ostrowski: Chairman Cotton, Ranking Member
6 King, and distinguish members of the Subcommittee on
7 Airland, thank you for the invitation to meet with you and
8 discuss our re-modernization. I want to applaud this
9 subcommittee and the committee as a whole for your focus
10 over the past several years on acquisition reform. Your
11 direction and support have made a substantial difference
12 for the Army. Some of the great examples include enabling
13 the use of other transactional authority, raising the
14 acquisition simplified threshold from \$150,000 to \$250,000,
15 pushing major defense acquisition programs down to the
16 services, starting to get after the Competition in
17 Contracting Act, or CICA reform, just to name a few.

18 Still, more must be done. For example, the simplified
19 acquisition threshold should be raised to \$500,000,
20 providing even greater streamlining and allowing us to keep
21 pace with threat.

22 With regard to mid-tier acquisition for rapid
23 prototyping and fielding addressed in section 804 of the
24 fiscal year 2016 NDAA, we are hampered by the requirement
25 to complete fielding within 5 years as opposed to achieving

1 initial operational capability within 2 or 3 years, which
2 is more consistent with our multiyear resourcing process.
3 We ask that you consider modifying this language.

4 Section 807 in the fiscal year 2017 NDAA must be
5 modified or repealed. Although major acquisition programs
6 have been delegated to the services, section 807 still
7 requires the Deputy Secretary of Defense approval for
8 establishing program targets for these programs, which is
9 contrary to streamlining the process. It adds back layers
10 of bureaucracy.

11 CICA reform could go much further than the pilot
12 established in the fiscal year 2018 NDAA. Hundreds of
13 millions of dollars are wasted due to lost time and effort
14 each year, while the number of successful protests against
15 DOD remains exceedingly low. Penalties leveled should make
16 industry think twice about whether to protest when they
17 know the chance of winning is small to nonexistent.
18 Penalties should be scaled to the contract value, thereby
19 not disadvantaging small businesses from putting forward a
20 legitimate protest when warranted. Further, we need to
21 eliminate the automatic stay as a protest is resolved. In
22 almost all circumstances, GAO bid protests result in a stay
23 in performance, thereby impacting mission and delaying new
24 contracts by many months.

25 And last, one of the most essential needs of the Army

1 right now is C.R. reform. We have seen no movement on the
2 fiscal year 2018 appropriations bill since November of '17
3 when the Army received the last of subcommittee marks,
4 which was the SAC-D. Right now, as a result of the
5 prolonged C.R. for the fiscal year 2018, DOD is not allowed
6 to begin new start efforts until a budget is passed while
7 simultaneously not being able to procure quantities greater
8 than the prior year's purchase without an approved anomaly.
9 This double jeopardy is placing 16 new start efforts on
10 hold and 10 production rate increases are being capped at
11 their fiscal year 2017 rates, thereby thwarting the Army's
12 ability to take advantage of quantity discounts, as well as
13 economic-order quantities.

14 So how do we fix this? The answer might be quite
15 simple. Allowing the services to execute at the lowest
16 mark of the four committees during C.R.'s until a budget is
17 passed. If this was in place today, we could have been
18 moving forward with our budget in 2007 after the SAC-D mark
19 in November.

20 Mr. Chairman and distinguished members of the
21 subcommittee, thank you for your steadfast and strong
22 support of the outstanding men and women of the United
23 States Army, our Army civilians, and their families.

24 This concludes my opening remarks, Mr. Chairman. I
25 look forward to your questions.

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[The prepared statement of General Ostrowski follows:]

1 Senator Cotton: General Dyess.
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1 STATEMENT OF MAJOR GENERAL ROBERT M. DYESS, JR.,
2 ACTING DIRECTOR, ARMY CAPABILITIES INTEGRATION CENTER

3 General Dyess: Chairman Cotton, Ranking Member King,
4 distinguished members of the subcommittee, thank you for
5 the opportunity to speak with you today about the enduring
6 need for Army modernization.

7 Our National Security Strategy states that we face
8 simultaneous threats from different actors across multiple
9 arenas, all accelerated by technology, and that the United
10 States must develop new concepts and capabilities to
11 protect our homeland, advance our prosperity, and preserve
12 peace. The National Security Strategy also directs the
13 Department of Defense to develop new operational concepts
14 and capabilities to win without assured dominance in air,
15 maritime, land, space, and cyberspace domains, including
16 against those operating below the level of conventional
17 military conflict. Operational concepts are important
18 because they drive capability development and provide a
19 basis for modernization necessary to overcome the
20 challenges of a future conflict.

21 The National Defense Strategy emphasizes that concepts
22 provide us the ability to anticipate the implications of
23 new technologies on the battlefield, rigorously define the
24 military problems anticipated in future conflict, and
25 foster a culture of experimentation and calculated risk-

1 taking. We have developed operational concepts to sharpen
2 our competitive advantages, enhance our lethality, and
3 shape our modernization strategy. The National Defense
4 Strategy also reminds us that modernization is not just
5 defined solely by hardware; it requires change in the ways
6 we organize and employ forces.

7 Over the past year, the Army and the United States
8 Marine Corps have developed the first iteration of the
9 multi-domain battle concept, and now, in support of the
10 National Security Strategy and the National Defense
11 Strategy, the Army, in coordination with the Marine Corps,
12 the Air Force, and Special Operations Command, we will
13 develop the multi-domain battle concept in the next
14 iteration. We want to address how the environment and
15 adversaries of change, how adversaries systematically
16 intend to accomplish their strategic ends, the specific
17 problems adversaries pose to the joint force and partners,
18 and systemic ways to compete with and, when necessary,
19 defeat those adversaries.

20 The multi-domain battle concept builds on current
21 service and joint doctrine. It aids the evolution of
22 current doctrine to include not only those capabilities of
23 the physical domains but also those of space, cyberspace,
24 the electromagnetic spectrum, the information environment,
25 and the cognitive dimension of warfare. It provides

1 recommendations for capabilities, those that commanders
2 might require to defeat an advanced enemy, and proposes a
3 new framework for understanding the expansion of the 21st-
4 century battle space. The multi-domain battle operational
5 framework accounts for extended ranges and complex
6 relationships, which accounts for all friendly and enemy
7 capabilities across all domains and levels of command from
8 tactical to strategic.

9 Based on our assessment of the projected operational
10 environment, we have identified five first-order problems
11 to U.S. forces that must be addressed as we mature the
12 multi-domain battle concept, which I will address in Q&A if
13 you want to go there. We need a joint force that can
14 credibly deter adversary aggression, defeat actions short
15 of our conflict, deny the enemy freedom of action, overcome
16 enemy defenses, control terrain, compel outcomes, and
17 consolidate gains for sustainable results.

18 On a personal note, in a couple of months I am going
19 to be retiring after 36 years of service, and I would like
20 to thank the members of the committee for taking care of
21 our soldiers, sailors, airmen, and marines. I would also
22 request a final push on the budget to provide for the
23 common defense for our great nation.

24 Thank you for your continued support. I look forward
25 to your questions.

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[The prepared statement of General Dyess follows:]

1 Senator Cotton: Thank you, General Dyess, and thank
2 you for your many years of service to our country. Since
3 you have concluded, I will keep you first in the shoot
4 here. Let us start with the threats that we face so we can
5 talk then about the strategy we need to counteract those
6 and the modernization approach to implement that strategy.

7 The National Defense Strategy and the National
8 Security Strategy directs the Department of Defense to
9 prioritize threats from Russia and from China. In the past
10 in testimony to this subcommittee and the full committee,
11 Army leadership has emphasized the rapid pace of
12 modernization that those two countries have undertaken
13 while the United States has been fighting low-intensity
14 counterinsurgency wars in Iraq and Afghanistan. In light
15 of this direction, in light of these circumstances, what is
16 the Army's mission-critical focus in your opinion?

17 General Dyess: The threats have been documented well
18 in testimony both by previous leaders but as well as we
19 talked about that last year. As far as the multi-domain
20 battle concept in the 21st-century warfare battlefield that
21 we see, it has expanded in several ways to include
22 geography. We think that we will be attacked in the
23 homeland if not by cyber but by other means that we will
24 have to, because our forces are mostly stationed in the
25 United States, deploy to areas in which we will conduct

1 those operations, that us in the Marine Corps see that the
2 close fight is certainly common considerations for both of
3 us, the Air Force establishing joint bases and establishing
4 air dominance in an integrated air and missile defense
5 capability A2/AD environment.

6 And we are going to be contested on all domains. It
7 is going to be increasingly lethal on the future
8 battlefield, that it is going to be increasingly complex
9 with urban cities and dense urban terrain and that our
10 deterrence is going to be challenged. And quite frankly,
11 we want to make sure that deterrence is forefront in our
12 problem statements so that we do not have to fight a war
13 and an armed conflict.

14 Senator Cotton: Thank you. General Anderson, the
15 vice chairman, General Selva, in recent media interviews
16 recently elaborated on the National Security and National
17 Defense Strategy looking at the threat of China and Russia,
18 explaining that China would be predominantly a maritime and
19 air operation, whereas a threat from Russia most likely in
20 the European theater would be primarily an air and ground
21 operation. Can you elaborate on what that means for the
22 Army's future modernization plans?

23 General Anderson: Yes, sir. I think -- well, you
24 know, anti-access/aerial denial is going to be a factor for
25 air and naval forces, again, which is all the things that I

1 was talking about in the multi-domain concept about how we
2 enable naval air forces to get into a China scenario. I
3 think what you both mentioned in your opening comments, all
4 things long-range fires, all things ballistic missile
5 defense, all things armor are huge capability gaps. I
6 think to fight the China challenges that are posed in the
7 NDS, which are the threats against Taiwan, South China Sea,
8 the Russia threats against NATO, both of their aspirations
9 from a nuclear scenario, and then you throw in the North
10 Korean nuclear scenario, you throw in the terrorism and the
11 counter-WMD scenario, and then you throw in the information
12 environment, and I think that reinforces all of our efforts
13 in the multi-domain fight and how you do offset and how you
14 allow -- how do you potentially achieve the ability of an
15 army capability to sink a ship at sea, you know, from afar?

16 And I think as we work those capabilities, that will
17 very much play out in a China scenario, and I think
18 everything we have talked about fits into the Russian piece
19 about countering armored formations coming across Eastern
20 Europe.

21 Senator Cotton: When was the last time American
22 soldiers fought against an enemy who had sustained aerial
23 attacks against U.S. soldiers?

24 General Anderson: Never.

25 Senator Cotton: What is the state of our air defense

1 artillery?

2 General Anderson: We have got a long way to -- so
3 that was one of the billpayers of sequestration. We took
4 air defense capability out of our formations, so you are
5 seeing the efforts here to put mobile SHORAD back into two
6 per a division formation. We are shooting to get two
7 battalions established by FY21, but you are seeing our 72
8 Avenger upgrades that we are doing right now to get into
9 Europe. That was all part of the heavy focus on Europe 2
10 years ago, and now, we are fast-forwarding that obviously
11 to the Pacific.

12 But, you know, we are doing everything from getting
13 mobile shoulder-fired Stingers out of all of the warehouses
14 to enable crews and teams to be deployed in each of these
15 theaters, so at least you have got something within your
16 organic capability, you know, and then obviously we have
17 got THAAD, Patriot, and those systems that are all being
18 enhanced for missiles, radars, sensors, and all the things
19 that are going on in those arenas. But right now, the
20 basic problem is combat formations do not have capability.

21 Senator Cotton: Thank you. My time has expired. I
22 will turn now to Senator King.

23 Senator King. Thank you, Mr. Chairman.

24 I am looking for an update. We have talked a lot over
25 the past year in the Army, as I mentioned in my statement,

1 I commend you for the focus on these issues of
2 modernization and setting up functional teams, the Futures
3 Command. Tell me where we stand. When are we going to see
4 results?

5 General Murray: Senator, as you know, the Army stood
6 up a plans team or an analysis team under the leadership of
7 Lieutenant General Ed Cardon to work through the mission
8 analysis for the Chief and the Secretary. None of us are a
9 part of that small group. It has been a fairly small self-
10 contained unit that is going through analysis. They just
11 recently completed a tabletop exercise. I believe they
12 war-gamed about six courses of action. And as far as I
13 know, they are still on track to come back to the Secretary
14 and the Chief with a recommendation on exactly what this
15 organization will do, what it will consist of.

16 Senator King. You are talking about the Futures
17 Command?

18 General Murray: I am, sir. I believe the last date I
19 heard was March, and as far as I know, they are still on
20 track to come back to the Chief and Secretary with laying
21 out those decisions for them.

22 Senator King. And a possible set up by summer?

23 General Murray: Last I heard, IOC or initial
24 operation capability June, July of this year with a full
25 operational capability to follow about a year later.

1 Senator King. Here is the real question: Do you
2 think we are really going to be able to break down the
3 stovepipes?

4 General Murray: Sir, I do. I think the biggest
5 challenge for this organization is doing exactly that, and
6 it is culture more than anything else. So I think the
7 biggest challenge for this organization would be to reshape
8 the culture to get after those stovepipes. And it is just
9 not the acquisition process. It is the requirements
10 process, it is the material delivery process. It is the
11 testing process. It is the bureaucracy associated with it.
12 And that is exactly the intent of the Chief is to stand up
13 this organization for unity of command and have a single
14 commander focused on doing just what you suggest, is
15 getting after acquisition, big A acquisition from
16 requirements to delivery of capability to our soldiers in a
17 very rapid fashion, somebody focused on that each and every
18 day, which right now it is spread amongst many
19 organizations.

20 Senator King. General Ostrowski, just a specific
21 question. You had some time on protests. What percentage
22 of significant acquisition contracts are protested?

23 General Ostrowski: Sir, I will tell you that I do not
24 have that exact number of ones that are protested. I will
25 tell you this, that 92 percent of the time the army on

1 average wins those protests. So we lose about 8 percent
2 over time. The other services have a record that is even
3 better than that. However, I have numerous programs now
4 that are in protest, Lakota being one of them, as you know.
5 That is one that is out there. There are numerous other
6 ones that are --

7 Senator King. Do I understand that the production,
8 the progress on the contract is stayed pending the protest?

9 General Ostrowski: Yes, sir. When you protest to the
10 GAO, the GAO has the ability to immediately execute a stay
11 unless it is beyond the time that you are allowed to
12 protest in the protest window. So in all cases for the
13 GAO, unlike the Court of Federal Claims, it is an automatic
14 stay. The Court of Federal Claims holds a stay hearing to
15 determine whether or not to put a stay on the particular
16 case or to not, and then go through the process of
17 adjudicating.

18 Senator King. But still, that is more time, more
19 bureaucracy, more reports, more studies.

20 General Ostrowski: That is correct. It does not -- a
21 stay -- in fact, what happens is our contractor is not
22 allowed to move forward. The program office sits idle, and
23 so does the contractor.

24 Senator King. You went through very rapidly a whole
25 series of recommendations for us. I am sure that is in

1 your written testimony, but if you could supply those in a
2 succinct form with some explanation as to where you think
3 we can help with this process because we are going to be
4 working on the National Defense Authorization Act starting
5 in a few months, and it would be very helpful to have those
6 specific recommendations. I mean, I think, you know, you
7 are doing -- and let me change the subject for a minute.
8 Talk to me about utilization of off-the-shelf products or
9 designs. I hope that is a sort of place to start rather
10 than designing something entirely new to our requirements.

11 General Ostrowski: Yes, as we go through the process,
12 the first thing we should do as a community is determine
13 whether or not our tactics, techniques, and procedures can
14 change in order to address the threat. If they cannot and
15 a material solution is the first thing that we have to go
16 to, the first thing is to go off and ask if we can find a
17 commercial product capable of doing what it is that we are
18 trying to do in terms of filling in the gap. If we cannot
19 find that, then the next step is to go to our allies to
20 determine whether or not there is a capability that exists
21 in a foreign country that is capable of doing so. If the
22 answer is still no, the final step is than to develop.
23 Unfortunately, too often, we jump right to the development
24 instead.

25 Senator King. That is what concerns me. I mean, that

1 is the history.

2 General Ostrowski: That is correct, sir, so we are in
3 the process of changing that. Again, it allows us to get
4 capability to the force faster, the only drawback being it
5 is not leap ahead. That would be the only drawback. But
6 it allows us to get the capability to our forces in a
7 faster manner, knowing that everybody in the Army does not
8 need to have one.

9 Senator King. I am just about out of time, but I
10 think the comments that you have made, we are talking about
11 a deep cultural change in the way a system has been
12 operating for years and years and years. Cultures are the
13 hardest thing to change. General Murray, do you think that
14 is happening? Is the word out there? Is there a sense of
15 urgency about this?

16 General Murray: I think it is, sir. I think we have
17 made a great start. The Army is a big organization. As
18 the saying goes, it takes a long time to turn a big ship.
19 And I know General Ostrowski and I co-chair a lot of
20 meetings where this type of dialogue comes up, and it is a
21 consistent message from both of us. And I just thing, I
22 mean, you have got to establish the culture change and then
23 continue to drive it year after year in some cases to make
24 sure it resonates throughout the organization. But I do
25 not think it is going to be a quick culture change because

1 cultures do not normally change quickly, but I think with
2 constant reinforcement and with the reinforcement we are
3 getting from most senior leadership, I think it will happen
4 over time.

5 Senator King. I found it salutary to remind people
6 and organizations that I work for that it took Eisenhower
7 only 11 months to retake Europe. It sort of gives you a
8 time frame for getting these things done. Thank you, Mr.
9 Chairman.

10 Senator Cotton: Colonel Sullivan.

11 Senator Sullivan. Thank you, Mr. Chairman. And
12 gentlemen, thank you for your service and being here today.
13 General Dyess, congratulations on your upcoming retirement.
14 I am sure you will miss the Army but probably not miss
15 hearings like this.

16 [Laughter.]

17 Senator Sullivan. General Anderson, I want to thank
18 you. I had the opportunity to go see the 4/25 over the
19 holidays out in Afghanistan, and morale was high and the
20 troops are doing well, so thanks for all your and other
21 members and General Milley's recognition of the importance
22 of that unit.

23 I wanted to talk first just kind of on an operational
24 issue. The European Reassurance Initiative, which has been
25 a very kind of heavy Army-led initiative, what impacts are

1 we seeing on our deployments there in terms of our allies,
2 maybe Russian reactions? Are we seeing it in a positive
3 way, and can you give us some anecdotes on that?

4 General Anderson: Sure, sir. Good to see you, as
5 always.

6 The requirement of going to a heel-to-toe armored
7 brigade combat team rotation has required us to take a
8 brigade that we had dedicated to testing at Fort Bliss and
9 put that into the rotational pool so we could sustain, you
10 know, three to Korea, three to Kuwait, three to Europe on
11 top of the two assigned brigades, there the 173rd and the
12 2CR. So the strain there in terms of maintaining that,
13 having a small hundred-man division cell that was the
14 fourth division getting ready to be the first division is
15 the command and control element underneath Army Europe has
16 been an additional requirement, and then the enhanced
17 forward presence package, which is the Baltics. That is
18 the Latvia, Lithuania, Estonia piece, which Canada,
19 Germany, and the U.K. and us in Poland and maintaining that
20 rotational battle group with an infantry company from the
21 U.K. and a SHORAD company from Romania. That commitment,
22 sir, has again been -- that was something we did not plan
23 on doing 2 years ago, so it is an additional strain on the
24 force.

25 The problem with the European activities operation

1 Atlantic Resolve, it is not a named operation, so that
2 means commanders cannot stop-loss, stop-move people. There
3 is no entitlement pays. You actually lose your separation
4 pay. It is not a tax-exempt deployment, so when people
5 compare that to other deployments from a family/personal
6 situation, people do not like that because --

7 Senator Sullivan. Are the things that we can do to
8 help with regard to addressing that because it certainly
9 seems to me, you know, in the category in importance of any
10 other type of deployment?

11 General Anderson: It is really an internal Department
12 of Defense thing in terms of authorizing it to be a named
13 operation or not, you know? And then the issue for Europe,
14 sir, is --

15 Senator Sullivan. Why has it not been --

16 General Anderson: Because a lot of people think they
17 have enough resources to get the job done, but when you go
18 visit them and you watch that brigade commander being
19 challenged to maintain his manning levels because he is not
20 allowed to keep people if they are scheduled to ETS,
21 retire, whatever. He can take them, but when they are 2
22 months out from having to leave the Army, he has to send
23 them home. So that is a constant rotating door -- we are
24 on our second turn right now -- and we struggle to keep
25 that brigade at 80 percent strength while it is in Europe

1 doing, you know, the exercise program.

2 Senator Sullivan. Yes. Let me kind of ask a somewhat
3 related question. General Dyess, during the March 2017 all
4 arms warfare hearing it was discussed that there is a lack
5 of advanced airland battle and training exercises. I know
6 General Milley has been talking about much bigger training
7 exercises as a way to integrate the entire force with
8 combined arms. I know a lot of that is done out at NTC.
9 There is an NDAA provision that takes a look at that. I
10 just want to highlight for you the -- and I am sure most of
11 you are familiar with it -- but the Joint Pacific Range
12 Complex in Alaska, has a land space the size of Delaware,
13 airspace for fifth-gen aircraft the size of Florida and
14 naval sea space the size of Virginia. So are you looking
15 at that as you are looking at major, you know, kind of
16 division-type exercises where you could exercise a couple
17 brigade or even a division and have airspace that is more
18 realistic with the fifth-gen type standoff?

19 General Dyess: So, I will start off and then I will
20 pass it to General Anderson because I will talk about
21 experimentation. We do experimentation inside of TRADOC,
22 and so what we want to do is make sure that we are
23 interoperable with our allies, and so both -- of all the
24 combined arms but also to be able to have secure voice
25 digital fires and a common operating picture. And we do

1 need the space to do that. We are conducting the --
2 Senator Sullivan. Does NTC provide you the space
3 or --

4 General Dyess: No, we are actually doing the next one
5 in May in Germany with a lot of the -- with the U.K., the
6 French, the Germans, et cetera. And White Sands, Bliss is
7 where we do a lot of those as well where we own all of
8 airspace as well as the electromagnetic spectrum.

9 So on the experiment side we would like to have the
10 ability to have our coalition partners and our joint
11 partners together to determine where we can make strides in
12 interoperability. And I will pass it over to General
13 Anderson on the training side because there is also a
14 training activity that occurs like the 18-4 activity with
15 the U.K. division with our XVIII Corps.

16 General Anderson: Yes, the key, sir, since we took
17 away that dedicated test unit between home station
18 training, CTC, the combat training centers, and exercises,
19 we have to leverage how we test stuff because we no longer
20 have a dedicated time and space or unit to do it. But what
21 Bo is talking about, our allies want to play in their
22 backyards, and we have to have a draw to them. And he just
23 described what we are getting ready to do here this spring.
24 All of them want a -- a large number of NATO members want
25 to play in this exercise because it is in Europe and it is

1 all things Russian.

2 You asked again what is a deterrence versus assurance?

3 Well, it is obviously assuring them but that the Russian
4 deterrence, when you can mask multiple countries with
5 multiple capabilities in and around Europe, that sends a
6 pretty loud and clear message, and that is why we have to
7 leverage that kind of stuff versus coming back in the
8 States. And we are using -- even more so than Polk, Irwin,
9 you know, Nellis, and those kind of places. That is the
10 key. That is what they want.

11 Senator Sullivan. Thank you.

12 Senator Cotton: Senator Peters.

13 Senator Peters: Thank you, Mr. Chairman, and
14 gentlemen, thank you again for being here today.

15 I want to pick up on the acquisition and the need for
16 a much quicker process that has already been raised, and
17 all four of you raised in your testimony as well. And I am
18 going to give you an assessment that someone gave me about
19 looking at the different acquisition communities and just
20 kind of get your sense how accurate you think this is. You
21 basically said that basically we have got silos and you
22 have got the science and tech folks that probably need to
23 do a whole better job of reaching out to private industry
24 and some of the new cutting-edge technologies and try to
25 examine what the possibilities are. There is not enough of

1 that that goes on.

2 The testing community sets unrealistic goals, and so
3 there is a lot of failures because the goals are
4 unrealistic and so the programs die or do not move forward.
5 And the requirement community always wants to do too much
6 and be all things to all people, and that is also
7 impossible as well. And so you start putting all of that
8 together in the hopper and everything kind of grinds to a
9 halt, which is obviously unacceptable at a time when
10 technology is advancing at a pace we have not seen in human
11 history. How would you characterize that assessment? Are
12 those legitimate concerns that we need to be thinking about
13 with those kind of communities? Whoever?

14 General Murray: I will take it, sir --

15 Senator Peters: Yes.

16 General Murray: -- if that is okay. And I will start
17 off and I will turn it over to General Ostrowski and I will
18 try to stay with the requirements piece of it you talked
19 about and let him talk the true acquisition piece of it.

20 So I would say that you are fairly accurate, whoever
21 you have talked to. We do a poor job of reaching out to
22 industry. A lot of times that is because of concerns by
23 our lawyers that -- in terms of competition and unfair
24 advantage to different competitors. I think we are getting
25 better at that. That is one of the roles as a CFT and our

1 senior leadership. The Secretary and the under and the
2 vice have sat down with numerous industry leaders over the
3 last 2 months or so to figure out what is going on in
4 industry. Getting our science and technology folks to
5 reach out to industry is important, as well as our
6 engineers to see what is available.

7 And somebody mentioned earlier about fielding stuff
8 quickly. We are interested in fielding stuff quickly using
9 technology that exists today, but it has to be able to be
10 upgraded over time. You know, we have been criticized,
11 rightfully so, for our modernization efforts in the past,
12 but we have been fairly successful in incrementally
13 upgrading the equipment we have. The M1 of today is vastly
14 better than the M1 we fielded back in the mid-'80s.

15 Senator Peters: Right.

16 General Murray: So when you acquire something
17 quickly, you also have to make sure that you can upgrade it
18 over time to account for new technologies. Part of that is
19 software-defined systems. Part of that is the size,
20 weight, and power to accommodate new systems in the future.
21 That is a piece of it. I think we have a very risk-adverse
22 culture. I mean, I do think our requirements are over-
23 specific. I think our testing community -- the Army's
24 testing community has made great strides. We now have as
25 part of the CFT for the programs they are working on

1 testers, engineers, S&T experts, and hopefully soon
2 industry sitting down with the requirements writers. So
3 before we write a requirement, we know it is feasible, it
4 can be tested relatively cheaply and in a fast amount of
5 time, and that industry can actually produce it. And that
6 is kind of what we are after as we go forward.

7 General Ostrowski: Sir, I would just add that General
8 Murray hit it on the head, and you did as well. The key to
9 the CFT standup, the impetus behind the CFT standup was to
10 address the very issue that you brought up. Now, the key
11 is is to get that culture ingrained in the rest of the
12 Army. We know that there are only six of these. The
13 intent is for that to trickle down, have a trickle-down
14 effect throughout the entire army so that our program
15 managers, our testers, our engineers, our scientists, our
16 contracting officers, and industry are engaged in a process
17 of determining what is in the realm of the feasible so that
18 when right requirements, we get after the capabilities that
19 we need in the time frame that we need them and the
20 capabilities that exist today in terms of technology.

21 General Murray: And I would like to add one more
22 thing because it is critically important is early soldier
23 involvement and often have soldiers involved in the process
24 so soldiers are part of the development of the requirements
25 and soldiers are part of the process all along to make sure

1 we deliver the capability they expect at the end of the
2 process.

3 Senator Peters: Actually, I would like to pick up on
4 that, General, because that is the other aspect of fighting
5 the war of the future that all four of you have mentioned.
6 It is not just the equipment; it is also the doctrine and
7 the operating doctrine. And history is full of examples
8 where armies with inferior equipment still beat the others
9 because they could operate -- they had a doctrine that
10 allowed them to operate much more effectively, so that has
11 got to be a key part of how we integrate with these new
12 technologies that are changing rapidly and will require
13 human machine interfaces in ways that we have not seen
14 before.

15 But I guess I am running out of time here. My
16 question is, in your view, should technology drive doctrine
17 or should doctrine drive technology?

18 General Dyess: I will take that one. Doctrine is
19 actually things that we can do today. Concepts are the
20 things that drive us toward the future. So we have taken
21 and redone FM 3-0 -- that is our operations manual -- but
22 considering the things that are in the multi-domain battle
23 that we can do today. So from my perspective we take a
24 look at the future and the technology as it is changing and
25 then incorporate that into the doctrine. That is my

1 perspective on that.

2 General Murray: And I would just say it is not a
3 chicken or egg. They will feed off of each other.

4 Senator Peters: Right.

5 General Murray: There will be technologies that will
6 drive new concepts and there will be new concepts that will
7 drive us to develop new pieces of hardware.

8 Senator Peters: So you have to be flexible in both
9 ways?

10 General Murray: Absolutely, sir.

11 Senator Peters: Great. Thank you.

12 Senator Cotton: Senator Wicker.

13 Senator Wicker: Gentlemen, thank you very much for
14 your service, and thank you for working hard during a
15 trying few years that you have had to deal with because of
16 decisions made in this building and on this Capitol Hill.

17 On page 2 of your statement you say, "The Army has
18 reached an inflection point: We can no longer afford to
19 choose between improving our existing systems and
20 developing new ones. We must do both." I was asking in
21 another setting the Secretary of Defense about his
22 statement that we have been climbing out of the readiness
23 hole, and we are going to have to do both now, readiness
24 and modernization. Your statement was prepared before we
25 got the news today about the agreement between the White

1 House and Republican and Democratic leaders in the Senate
2 about the new defense caps. If we do not pass the new
3 defense caps tomorrow, what does that do to your ability to
4 make this sentence come true?

5 General Murray: I think it would be devastating,
6 Senator. As you mentioned, that prepared statement has
7 been done for probably about a week-and-a-half now, and
8 that specific sentence was crafted with the '19 President's
9 budget request in mind. So if we do not get a budget, if
10 we go to a sequester, we go to some kind of furlough again,
11 we would not be able to do both.

12 Senator Wicker: And actually, what I think we are
13 going to do if we have got the votes is we are going to
14 appropriate to the National Defense Authorization Act
15 level. And I think the House of Representatives has
16 demonstrated that they already have the votes to do that.
17 What have we not been able to do? Help the people who are
18 listening by way of C-SPAN right now. Help us to
19 understand what is at stake in terms of actually what we
20 have not been able to do and what we have been able to do,
21 if we take a grownup vote tomorrow and actually give you
22 what you need?

23 General Murray: Just a couple of examples, Senator.
24 So the only new developmental program that we have started
25 in the 2 years that you have mentioned is the Mobile

1 Protected Firepower light tank. We have no other new
2 developmental combat vehicles in production, and that is
3 not even in production. We are expecting some bid samples
4 here in the next month or so to go into a downselect for a
5 producer. We have been focused solely on keeping the
6 equipment we have as modern as we possibly could while
7 others have modernized their fleets.

8 We have no new aircraft in production. We are still
9 flying the same aircraft that we were flying in the 1980s
10 that came out. And probably the worst part of that is with
11 the resources we have been operating with, with the focus
12 on readiness was exactly where the focus should be, we
13 would be using the same fleets for the next 20 or 30 years.
14 This budget request I firmly believe -- and if the numbers
15 are anywhere near the NDAA level, we will be able to start
16 development of new systems that we will need on the future
17 battlefield. So we have been maintaining parity as best we
18 could by incremental upgrades to systems, but there is
19 nothing leap ahead about what we are doing. That is what
20 we want to do is go after the system that will provide us
21 the overmatch into the future against a peer adversary.

22 Senator Wicker: Okay. Let me shift gears in the last
23 minute. As you know, Army Corps of Engineers ERDC is
24 located in Vicksburg, Mississippi, high use of
25 supercomputing there. To what extent is supercomputing

1 important Army-wide in getting you the information you need
2 and how weapons systems respond to complex environments?
3 Who would like to take that?

4 General Ostrowski: Sir, I can take that. It is
5 absolutely critical. Frankly, with respect to the Chinook
6 helicopter, our Block 2 Chinook, we have avoided about \$50
7 million worth of costs in terms of flight based on being
8 able to supercompute the effects that the new blade rotors
9 are going to have on the aircraft, the new fuselage is
10 going to have on the aircraft. We can avoid all that
11 through the stimulation of training that the supercomputers
12 divide us.

13 With respect to the tank, Abrams tank in terms of its
14 armor, the ability to -- as we upgraded the armor in the
15 last version, the B3 version of the Abrams, the ability to
16 use the supercomputers to determine what the armor would be
17 capable of doing in terms of the threat, you know, whether
18 it be kinetic or whether it be RPG or whether it be in
19 ATGM, what would be the result of the armor that we add as
20 a result of being able to stop those particular threats,
21 all made possible by the supercomputing capabilities that
22 you mentioned? It is critical to us. It is critical to
23 the joint force. The Army is just one participant in this.
24 We have the other services as well, and so it is a great
25 capability, sir.

1 Senator Wicker: Thank you. Thank you, Mr. Chair.

2 Senator Cotton: Senator Warren.

3 Senator Warren: Thank you, Mr. Chairman, and thank
4 you to all of our witnesses for being here today.

5 You know, we have been concerned in recent years that
6 near-peer competitors like China and Russia are narrowing
7 the technology gap and putting our forces at greater risk
8 if they ever had to engage in conflict. So in response,
9 the Army has announced plans to establish new futures and
10 modernization command focused on your six modernization
11 goals, things like next-generation ground vehicles and more
12 survivable helicopters and more resilient networks.

13 I understand that in each of these priority areas you
14 plan to integrate the requirements development and
15 acquisition processes into combined teams focused on your
16 modernization goals, and I think this is smart. I think it
17 is a good thing that you are planning to do. But today,
18 much of the cutting-edge technology is not developed within
19 the Pentagon but over in the commercial sector or in the
20 laboratories, at our colleges and our universities, so I
21 want to ask about a different kind of integration between
22 the Army and these outside innovators.

23 I thought I might start with you, General Ostrowski or
24 General Dyess. How important is it to capitalize on
25 commercial and academic developments in advanced

1 technology? And as the Army develops this command, what
2 steps are you taking to make sure that you are closely tied
3 to these outside innovators?

4 General Ostrowski: Ma'am, I will start, and then I
5 will turn it over to Bo, but the bottom line is is that it
6 is absolutely critical that our communities within our
7 organic S&T work with industry across the board. And we
8 have numerous programs that initiate that piece.

9 One of the things that the Hill has given us in terms
10 of capabilities is this thing called other transactional
11 authority. As you know, ma'am, 90 percent of the
12 businesses in the United States do not want to do business
13 with the Department of Defense because it is too
14 bureaucratic, it is too hard, especially small business and
15 innovative companies. The use of other transactional
16 authorities allows us to get around those FAR-based
17 contracting. It allows us to work with these small units
18 and small businesses and so forth. So it has been a
19 critical step to that.

20 The establishment of the DIUx, again, at the
21 Department of Defense level, able to reach out to these
22 industries that would not be willing to normally do
23 business with us, again, breaking those barriers down. So
24 there has been numerous efforts to try to get at that 90
25 percent of the population in terms of our companies that

1 want to do business with us to be able to do that.

2 Senator Warren: Good. So breaking down the barriers,
3 DIUx, you sing my song when you talk about them. General
4 Dyess, what would you like to add?

5 General Dyess: Just that we need to know what
6 technology is out there on the Department of Defense side
7 when we write requirements and so that we do not write a
8 requirement that is not attainable.

9 Senator Warren: So how do you do that?

10 General Dyess: Well, it is --

11 Senator Warren: How do you find out?

12 General Dyess: So it is back and forth. It is
13 exchange of information. It is here is the way we would
14 like to have the requirement. Usually it is a -- we are
15 not at the technology readiness level that you desire, and
16 then there is trades discussion that happens with all of us
17 on this table here, General Murray on the resource side,
18 General Ostrowski on the acquisition side, and me on the
19 requirements side. So there is trades discussion that
20 happens inside of that. It has got to be informed by the
21 technology that is available out there in those small
22 companies --

23 Senator Warren: Yes.

24 General Dyess: And that is key --

25 Senator Warren: And that takes some systemic

1 interweaving as you go along. You know, I may be biased, I
2 probably am, but I think Massachusetts is the most dynamic
3 innovation economy linking world-class universities,
4 federal labs, commercial startups --

5 Senator King: We call it southern Maine.

6 Senator Warren: Yes.

7 [Laughter.]

8 Senator Warren: Social climber.

9 [Laughter.]

10 Senator Warren: And that we have workforce that has
11 the best STEM education in the country. And when I go home
12 to the Commonwealth, there are a lot of people there who
13 ask what can I do to serve my country? What can I do to be
14 part of the defense of this nation? So I just want to make
15 sure that this question about innovation as you are
16 thinking about how better to integrate going forward is not
17 only about the Army and what gets developed within the
18 Pentagon but what we are developing out there in the rest
19 of the world. They are opening up new horizons every
20 single day, and it would be very much to our detriment if
21 the Army missed that. So I hope we can continue to work
22 together on that.

23 Thank you all for being here. Thank you.

24 Senator Cotton: I will begin round two.

25 General Dyess, I want to ask two more big-picture

1 questions and would appreciate the answer in the simplest
2 most layman's terms. What is the Army's modernization
3 strategy, and who is responsible for that strategy?

4 General Dyess: Well, the Secretary and the Chief are
5 going to approve the strategy, and they are going to submit
6 that strategy in accordance with the NDAA by the 30th of
7 April of this year. The strategy essentially lines up the
8 modernization priorities that have already been, as you
9 have talked about, Senator King and my colleagues here at
10 the table, essentially tells you how we intend to get after
11 those modernization priorities.

12 There is an upfront piece that establishes the current
13 state that we find ourselves in on modernization, but I
14 would say the majority of the document are in annexes that
15 describes the six modernization priorities, as laid out by
16 the Secretary and the Chief in some detail.

17 Senator Cotton: If I call Army leadership principles,
18 the Secretary and the Chief are responsible for everything
19 the Army does and fails to do? Is that --

20 General Dyess: Well, title 10, manned, trained,
21 equipped, assessed station is the responsibility --

22 Senator Cotton: Who beneath the Secretary and the
23 Chief is personally responsible for the Army modernization
24 strategy?

25 General Dyess: Well, there are a lot of people

1 helping them, Senator, but I think I am helping writing
2 that down at Army Capabilities Integration Center with the
3 help of my colleagues here at the table.

4 Senator Cotton: Thank you. And building on that,
5 what are the key objectives of our modernization strategy
6 in the near term, say, defined as the next 2 years?

7 General Dyess: I think in the next 2 years -- and you
8 will see this I think when the PB19 comes over -- is a
9 thorough review of our science and technology dollars that
10 are aligned to the modernization priorities. A lot of
11 those modernization priorities, unless we do off-the-shelf
12 of existing equipment that is out there, are going to
13 deliver in at least '21, '22, and beyond time frame. So if
14 you ask the question what is happening in the next 2 years,
15 it will be a realignment of some of those dollars, which
16 you will be able to see on the 12th, and then essentially
17 the experimentation and demonstration of capabilities that
18 those cross-functional teams will be doing, and then in the
19 early to mid-'20s the delivery of capability.

20 Senator Cotton: Thank you. General Ostrowski,
21 sticking with the big picture, the Army future combat
22 system was, let us just say, less than a tremendous
23 success. General Milley acknowledged this in recent
24 remarks to the Association of the U.S. Army, but he also
25 stressed that we do need to have a significant leap ahead

1 in the technology that we are fielding, 10X in fact he
2 said, and pointed out some examples from the 1980s how we
3 succeeded in that effort with systems like the Abrams, the
4 Bradley, Patriot, the Apache, the Black Hawk. How do we
5 model on that success from the 1980s and avoid the failures
6 of the Future Combat System?

7 General Ostrowski: Mr. Chairman, the key is to do the
8 experimental and the prototyping up front and early with
9 soldiers. General Murray mentioned this earlier. If we
10 are going to fail, we need to fail early. So early
11 prototyping is absolutely essential in getting after this
12 piece. The problem that we have had in the past has been
13 we have been too I would say hurried to rush into a program
14 of record. And once we did, with technology that was never
15 even ready for the technology readiness reduction phase of
16 the program, so we have to spend more time understanding
17 the technology first, writing the requirement to do so, and
18 then once we understand the state of the art of technology,
19 ensure that we prototype that and we fly before we buy
20 before entering into a major effort.

21 General Murray: And I would just add, Mr. Chairman,
22 we also have to be comfortable with the 80 percent solution
23 as the initial development. And I would just -- I go back
24 to the M1 tank, which you mentioned was originally fielded
25 with 105 millimeter cannon. We knew we needed 120

1 millimeter. The technology was not there, so we fielded it
2 with 105 with the space to upgrade it to a 120 as we went
3 along, so that type of 80 percent is good enough -- perfect
4 is the enemy of good enough --and then get on with it and
5 improve it over time.

6 Senator Cotton: Thank you. I want to turn to more
7 specific programmatic questions from the big-picture
8 questions I have explored, but first, I will turn to
9 Senator King for his second round of questioning.

10 Senator King: General Ostrowski, I have some
11 questions about the industrial base. I am concerned about
12 the loss of smaller firms either because they cannot
13 compete or -- we have had testimony before the full
14 committee that smaller firms, particularly in places like
15 Silicon Valley, just will not even bid anymore they are so
16 fed up with the Pentagon process and the burden and how
17 long it is and the restrictions. I am worried about the
18 consolidation of the industrial base and the loss of
19 smaller, agile, creative companies. Talk to me about that.
20 How can we be sure that we are not going to lose the
21 innovation that comes from these smaller companies because
22 of the cumbersome nature of the process? I am sure you
23 understand what I am talking about.

24 General Ostrowski: Senator, I do, and I understand
25 exactly where you are coming from. And the bottom line is

1 that, as you know, 90 percent of the companies in the
2 United States do not even want to do business with us
3 because it is too cumbersome, and so the thing --

4 Senator King: That is a really bad sign.

5 General Ostrowski: Yes, sir, but the bottom line is
6 that the things that you have been able to allow us to do,
7 the other transactional authorities piece that I mentioned
8 a little bit earlier allows these companies to be able to
9 want to then do business with us because the burdens of the
10 FAR are not placed on them. So that is a huge tool that we
11 have been able to use as we go forward, especially with the
12 smaller companies.

13 The other piece of this is ensuring that we understand
14 from a big supplier perspective. We need to know the
15 second-, third-, and fourth-tier level suppliers throughout
16 everything that we are doing and being able to work with
17 our primes to ensure that we have a status on each one of
18 those because if any one of those are going to go out of
19 business based on lack of orders or whatever the case may
20 be, we have to be able to support those companies because
21 they do provide a capability that no one else does.

22 Senator King: Right.

23 General Ostrowski: And so we have programs associated
24 with the Army and the other services to be able to identify
25 those companies and continue to support them because they

1 have those critical components that nobody else will
2 produce.

3 Senator King: Let me change the subject from
4 acquisition, which is mostly what we have been talking
5 about, and talk about doctrine and hybrid war. Are we
6 developing the doctrine to deal with an entirely different
7 kind of incursion such as what we saw in Ukraine or Crimea?
8 And that is a difficult strategic and doctrinal question
9 because you never really quite have that kinetic, you know,
10 event that can trigger a conventional kind of response.
11 General Dyess, what do you think about that? Is the Army
12 thinking about this?

13 General Dyess: I would be glad to talk about that,
14 Senator, because I think that when we -- we talked about
15 the battlefield framework and the expansion of just not
16 only geography but also time. Instead of the joint
17 planning construct would have the phases, phase 0 through
18 phase 5, we have essentially done away with that because in
19 that construct you are either in armed conflict or not in
20 armed conflict. You are either yes/no, black/white, on/off
21 when in fact, short of armed conflict, we are in
22 competition right now, and that is what we are calling it,
23 a competition phase, an armed conflict phase and then a
24 return-to-competition phase. So there is activity that is
25 occurring --

1 Senator King: But I think we need a term between --
2 competition sounds benign. If the Russians interfere in
3 the elections in the Czech Republic and elect a pro-Russian
4 as President, that is not competition. That is something
5 else. It is between competition and conflict, but it is --
6 I think we need to find another concept. I see it as
7 beyond just competition.

8 General Dyess: I would not disagree with you, but
9 that is our first cut on this to try to describe something
10 that is short of armed conflict because if you just have
11 yes/no, black/white, on/off armed conflict, no armed
12 conflict or 2.9 --

13 Senator King: That will not do today.

14 General Dyess: It is not good enough.

15 Senator King: No.

16 General Dyess: And so that is our first attempt at
17 it. But we have incorporated some of that into our current
18 doctrine and thinking especially in the area of space,
19 cyberspace, electromagnetic spectrum, information
20 operations, cognitive dimension of warfare. We are
21 starting to develop things in those areas that answer that
22 question.

23 Senator King: And it seems to me that this is an area
24 where we have to really pay close attention to our allies
25 because that is where this is going to happen. It is going

1 to happen in the Baltics or it is going to happen -- you
2 know, it is already happening in the Ukraine. It is going
3 to happen in other areas. We have got to have a very close
4 relationship because they are on the ground and see it.
5 That has been my observation. And we are going to have to
6 listen to how they expect to deal with it.

7 General Dyess: So our first problem -- and we have
8 identified in the multi-domain battle those five problems I
9 talked about. The first one is how do U.S. forces deter
10 the escalation of violence, defeat adversary operations to
11 destabilize the region, and turn denied space into
12 contested space should violence escalate? That is our
13 first problem. And so I think it is very important to
14 define the problem before you start chasing down solutions,
15 and we identified that as one of the problems with this new
16 framework in multi-domain battle.

17 Senator King: Well, I am concerned that Russia can
18 rebuild the Soviet empire without firing a shot by
19 political manipulation and other kinds of I guess I call it
20 subversion in some of these Eastern European countries.
21 And they are proving themselves pretty adept at that.

22 Thank you, gentlemen. I appreciate it.

23 Senator Cotton: Gentlemen, as I said, I would like to
24 go through some more programmatic questions now, turning
25 away from the big picture. Senator King, I will invite you

1 to interject at any point where you might have anything to
2 add. I will direct my question to one of the witnesses,
3 but if anyone would like to volunteer for an answer, please
4 feel free to jump in. If the question is directed towards
5 you and you would like to volunteer one of your peers to
6 answer, please do that as well.

7 General Milley and Deputy Secretary McCarthy addressed
8 a lot of the Army's top modernization priorities last year
9 at the AUSA convention, so I will take my guidance in part
10 from their remarks, the first among that is long-range
11 precision fires. General Ostrowski, can you tell us where
12 the long-range precision fires program stands today and
13 when do we expect capability to reach the field?

14 General Ostrowski: Yes, sir, I would be happy to.
15 The long-range precision fires is in the technology
16 maturity risk reduction phase. We have two competitors --
17 Raytheon, as well as Lockheed Martin -- that will be
18 providing us up to four missiles, for missiles exactly by
19 the fourth quarter of '19 in order to flight-test those
20 missiles. We will flight-test three of the four. From
21 that point we will be able to determine just how close we
22 are getting to the requirement of the 499 capability in
23 terms of kilometers in the range. Depending on the
24 maturity of what we get, the intent is to move into a
25 milestone B on that program in second quarter of '21 and

1 move forward from there. Again, it will all depend on
2 where we stand in terms of the technology and how fast we
3 can deliver this capability. Right now, worst-case
4 scenario, '27. The intent is to move that more towards '25
5 or earlier, but it will all depend on how capable those
6 missiles are in the fourth quarter of '19.

7 Senator Cotton: You mentioned 499. That is to remain
8 compliant with the Intermediate Range Nuclear Forces
9 Treaty?

10 General Ostrowski: That is correct, sir.

11 Senator Cotton: So it is now acknowledged openly by
12 the United States Government that Russia is in violation of
13 the treated. Of course, China is not a signatory to that
14 treaty, nor is any other nation on earth, which means the
15 United States is the only country that restricts its long-
16 range missile development to under 500 kilometers. Do
17 those restrictions inhibit the Army's ability to develop a
18 long-range precision fire capability that can outrange
19 Russian and Chinese threats? Does it put our forces at a
20 disadvantage?

21 General Murray: In terms of ballistic missiles,
22 absolutely.

23 Senator Cotton: Thank you. Let us move on, General
24 Murray, since you volunteered for that question, to the
25 next modernization priority. The next-generation ground

1 combat vehicle, we are still, as I understand it, in a very
2 early stage and unclear whether it would be a vehicle to
3 replace the Bradley or the Abrams or both, is that correct?

4 General Murray: Yes, sir, to be determined.

5 Senator Cotton: So what is the Army leadership doing
6 to analyze feasibility for foreign vehicle designs or
7 component systems for suitability in this program?

8 General Murray: Sir, right now, we are looking at all
9 options to include foreign vehicle design and new
10 development to be honest with you. And you mentioned the
11 Chiefs remarks not only at AUSA breakfast but in lots of
12 other places, and he is very much focused on a 10X
13 capability. And he acknowledged some of the technologies
14 do not exist, so some of the things we are looking for is
15 alternative power, so get away from diesel turbine engines
16 or piston engines. The Chief has been very clear on any
17 future combat vehicle development will at least be
18 optionally manned if not semiautonomous or autonomous so
19 commanders at the point of contact will have the option to
20 send the vehicle forward unmanned or manned.

21 We are looking at the incorporation of probably simple
22 AI at this point, so driver assist, 360 degree S.A.,
23 computer-assisted targeting and acquisition functions
24 within the turret. We are looking at absolutely an
25 integrated active protective system on the next-generation

1 vehicle, whichever one it is and both, enhance lethality, a
2 lighter weight so we get away -- the weight issues we have
3 with the current generation of combat vehicles, and
4 whatever we come up with, we have to account for operations
5 in dense urban terrain, which I think the Chief has said.

6 So that is a lot out there that may not exist right
7 now, so what allies are developing, what Senator Warren
8 said is being developed within the commercial industry,
9 small business, universities, academia and the science and
10 technology range, I mean, we have cast a wide net. But I
11 go back to what I have said earlier; we cannot wait 20
12 years to develop this vehicle, so we have got to find a
13 solution that we can develop fairly quickly that we can
14 incorporate technologies as they mature in a relatively
15 easy manner.

16 Senator Cotton: If we turn to the contrast in the
17 prior round of questioning to the modernization programs in
18 the 1980s, which by and large succeeded in the FCS, which
19 failed, one difference is that those 1980s programs were
20 complementary and separate, not a single platform that was
21 going to do all things for all people so that we if they
22 failed like -- I think there was an antiaircraft gun in the
23 1980s that ended up failing. You still have your utility
24 helicopter, your attack helicopter, so on and so forth.
25 Would this next-generation combat vehicle put us at risk of

1 something like the FCS again that we are trying to build a
2 platform that can do multiple different roles? And if it
3 fails, then we fail across all those roles or functions?

4 General Murray: Potentially, and I think that is
5 something we have to keep in mind as we go forward. And I
6 think -- and I have read the report on the FCS. I think
7 most of us have read the report on the FCS, and the Army
8 senior leadership has committed not to make the same
9 mistakes again. And I think some of the mistakes we did is
10 we bet on a technology and developed a platform around
11 those technologies, and when those technologies did not
12 deliver, the platform did not deliver.

13 And so the intent is, as we have said before, Senator,
14 is figure out what is physically possible from a technology
15 standpoint to do today before we go into development and to
16 make sure we build the space into the vehicle to
17 incorporate technologies that we know are coming in the
18 future. We do not want to deliver something the day you
19 deliver it, it is obsolete.

20 Senator Cotton: Let me turn to the third priority,
21 active protection systems. Those are systems that are
22 designed to protect vehicles from threats like RPGs or
23 long-range antitank missiles. These are already fielded in
24 Israel and Russia. The German army is beginning to acquire
25 systems from one of its domestic producers. Sweden and

1 Singapore are acquiring systems from Germany, and the U.S.
2 Army has recently acquired three systems for testing for
3 foreign and domestic designers, learning how to integrate
4 their designs into Abrams, Bradleys, and Strikers. I think
5 this is largely a good-news story, an example of how the
6 Army can be more flexible and looking to foreign systems
7 and commercially available systems. General Murray, can
8 you discuss the status of this effort and the Army's recent
9 position -- or position on the recent DOT&E report that
10 outlined some of the remaining technical challenges that we
11 might encounter during the testing?

12 General Murray: Absolutely, Senator. So we bought a
13 very limited number of the Trophy system. And you said
14 integrated. It is really not integrated. It is installed
15 on the Abrams tank. We took it through characterization.
16 We took a through mobility testing, Yuma Proving Ground.
17 We had some issues we have worked through, and we are
18 fairly satisfied with where we are on the Trophy system.
19 That was phase 1, the characterization phase. Phase 2, the
20 testing phase is really what DOT&E pointed out in terms of
21 working through everything else we have to in terms of
22 testing. But we are fairly comfortable with where we are
23 on the Trophy other than it is installed. It is not an
24 integrated system on that tank. It is added weight, it is
25 added width, and so it has really just kind of compounded

1 our problem. But it is -- through characterization we are
2 very satisfied with it.

3 Iron Curtain on the Striker and Iron Fist on the
4 Bradley have had some issues over the last 6 months or so
5 in terms of their characterization. It probably was to be
6 expected. They are much less mature systems than Trophy
7 was. Iron Fist is an Israeli system, and Iron Curtain is a
8 domestically produced system. Iron Fist right now should
9 -- they have worked through their issues according to the
10 engineers.

11 We should start characterization on that system down
12 at Redstone Test Center probably the end of this month,
13 maybe beginning of March, and Iron Curtain is finishing up
14 its characterization. And then we are going to
15 fundamentally have to make a decision on really all three
16 systems but in particular the last two. And part of, you
17 know, failing and failing early is the willingness to walk
18 away, and so basically, on what we have seen, are those the
19 systems we want or are they not the systems we want? And
20 if they are not, some of the other systems you mentioned we
21 would be willing to go look at before we make a decision.

22 And then, ultimately at the end -- and I just had a
23 session on this yesterday -- our integrated system, the MAP
24 system, Modular Active Protection System, is our
25 steppingstone of the future so that soldiers have common

1 interfaces no matter what vehicle they are on. It gives a
2 soft-kill, hard-kill capability. It gives a target
3 acquisition capability so when you get shot at, you slew-
4 to-cue. But it is the system that any effect or any radar,
5 any EO/IR sensor can fit into, and it is completely
6 integrated into the vehicle design.

7 Senator Cotton: Thank you. Talking to a fourth
8 priority, air defense, General Anderson, I will return to
9 you since we discussed earlier. It has been at least since
10 the Korean War since the United States ground forces have
11 kind of, under sustained aerial attack -- obviously the
12 threats that we face from China and Russia, though, could
13 mean that that kind of threat would return. You mentioned,
14 you know, taking Stingers out of the warehouses. Stinger
15 and Avenger have been in service for four decades I think.
16 How confident are we in the ability of those weapons
17 systems to effectively counteract threats from Russia
18 and/or Chinese aircraft?

19 General Anderson: That is why earlier there is no --
20 we have never fought in this type of an environment, so
21 what you are talking about, they are not capable, sir. So
22 the issue becomes what is the next generation? Everything
23 I talked to you about were additive things from sensors to
24 radars and to provide some capability to give yourself a
25 chance. But at the end of the day we have never faced

1 something like that. So the issue becomes now, as we work
2 the PAC-3 MSE, it has got to be in the munitions and it has
3 got to be -- and right now, it is a sheer function of --
4 that is why when you talked about gaps earlier, we have got
5 to restore BMD capabilities at a much broader -- we are
6 short THAAD, we are short Patriot. We are moving -- we are
7 actually reallocating Patriots as we speak from one COCOM
8 to another to deal with things on the Korean peninsula, and
9 so that is the capability gap that we are focusing on in
10 the near term as part of the modernization strategy. It is
11 fires and BMD because we are shortchanged both by
12 capability and capacity.

13 Senator Cotton: So better than nothing, which is
14 largely what we currently have?

15 General Anderson: The Stinger thing was a purely --
16 you know, it was amazing we pulled it off. It was a purely
17 minimalistic approach to make sure that there was
18 something. And this also affects the Counter-UAS fight, so
19 that is a whole different story, as you know, and there are
20 about 19 systems. That is a good news story how the Army
21 went commercial off-the-shelf, used other existing systems
22 from other countries and gave our soldiers about 19
23 options, so everything from lasers to drone defenders to
24 LIDS to, you know, AUWS, all stuff that has worked. And so
25 that was a game changer pretty quickly in Iraq. Now, the

1 question becomes how effective are they going to be in
2 places like the Korean Peninsula, Eastern Europe?

3 Senator Cotton: Thank you. Let us turn to the fifth
4 priority, which is kind of the opposite side of the same
5 coin, future vertical lift and the vulnerability of our
6 aircraft to enemy air defenses, in particular the Black
7 Hawk replacement. There were some ambitious requirements
8 that were laid out to travel twice as far and twice as fast
9 compared to traditional helicopters in the same class. But
10 at the same time, it is going to be facing a lot of new
11 threats in terms of integrated air defenses and
12 increasingly advanced manned portable air defense systems.
13 What steps is the Army taking to make sure that that future
14 platform can be survivable in that kind of environment?

15 General Ostrowski: Mr. Chairman, I can take that
16 particular question. You are very familiar with the joint
17 multi-role tech demonstrator that we have going on right
18 now, two different aircraft both with Boeing and Bell. We
19 have had the flights go on with Bell in terms of the tilt
20 rotor aircraft, and we have hope that by late this summer
21 we will see the Boeing compound coaxial helicopter in
22 flight. The efforts and the information that we will gain
23 from both those tech demonstrators will allow us to be able
24 to move forward in terms of our priorities of capability
25 sets, whether it be 1, 2, or capability set 3, which these

1 are based upon.

2 Aircraft survivability with respect to that platform
3 and our current fleet remains paramount to us. It is one
4 of our top priorities within future vertical lift and the
5 whole combat. So with respect to that, we are investing
6 heavily with respect to the CMOS program, as well as
7 getting after the ability to interdict the particular
8 missiles while in flight. Now, this is tough because we
9 are always shooting behind the duck. And I think you know
10 what I mean with respect to that. In order to defend an
11 aircraft against a ground-based missile, you have to be
12 able to confuse that missile. In order to do that, you
13 must be able to take the steps necessary in order to create
14 the software to execute that. That takes time and testing.

15 We have to go after kinetic capability, one that is
16 not dependent upon software in order to defeat or dazzle
17 the particular surface-to-air missile. That is what we are
18 trying to get after. That is the next step. Just like we
19 have APS for our combat vehicle fleet in the future in
20 terms of that, we have to have APS for our aircraft.

21 Senator Cotton: What steps if any is the Army taking
22 to promote the use of those future platforms across the
23 joint force or with allied partners? I am always somewhat
24 mystified when a multi-role, you know, workhorse is not as
25 widely accepted outside of the Army as it ought to be.

1 General Murray: The current program is a joint United
2 States Marine Corps/United States Army program. I would
3 say very limited interest right now from allies because
4 they are kind of waiting to see where we go with this.
5 And, as General Ostrowski mentioned, the CFT, the future
6 vertical lift CFT obviously is very focused on this in
7 terms of are we on the right path, are we on the right
8 timeline, what are the critical capabilities we have got to
9 look at? Because you mentioned, you know, we are looking
10 for fundamentally different -- we are changing the physics
11 of rotary wing flight. And so to make sure we have got it
12 right, that has become a focus, that we are on the right
13 path to get there. And I do think the joint multi-role
14 demonstrator is potentially a way of doing things in the
15 future. We have invested less than 50 percent, well less
16 than 50 percent of the money to develop these
17 demonstrators. This is mostly an industry nickel, which is
18 I think probably the right way to go as we get into the
19 future for other major programs.

20 Senator Cotton: How feasible would it be to have buy-
21 in from the Navy or the Air Force for some of their rotary
22 wing requirements? One constant question the subcommittee,
23 in addition to the larger committee, explores, for
24 instance, is the need for a rotary wing helicopter for the
25 Air Force to maintain security and safety at its ICBM sites

1 in the Western United States. Again, it is strange to me
2 that a specialized helicopter is needed for that kind of
3 mission.

4 General Murray: I would agree with you, Senator, but
5 right now, I think it is very much -- the other services,
6 much like our allies, are waiting for us to kind of figure
7 out where we are going to take this. And I do think, you
8 know, if we are successful, obviously it would be a very
9 capable aircraft that would be obviously a multi-role
10 aircraft. And I think they are waiting to see how much the
11 aircraft will cost, what the capabilities of the aircraft
12 are because each service has unique capabilities that we
13 require in our aircraft. For us, it is about mobility on
14 the objective, to get soldiers on and off the objective.
15 The Marine Corps have a slightly different priority, the
16 Navy has a different priority, and of course the Air Force
17 has a different priority for their aircraft. But I do
18 think it will be a very capable aircraft that potentially
19 could be utilized by all four services.

20 General Ostrowski: Senator, I would just add that
21 this wheel has been created. The Black Hawk today the Air
22 Force flies, the Black Hawk today the Navy flies, different
23 variants and so forth. It was never a joint program to
24 begin with, but the other services have adopted our
25 material solution.

1 Senator Cotton: Sixth, networks, especially mobile
2 networks, WIN-T and DCGS, I think you are all aware that
3 this is something on which I focused for many years.
4 General Ostrowski, what is the plan to repair the mobile
5 network?

6 General Ostrowski: Sir, again, our strategy is to
7 halt those efforts in terms of WIN-T Increment 2 that we
8 know are not going to work in a contested environment. We
9 will build upon increment 1B, as we have. That is our
10 system at the hull. And we will buy modified pieces of
11 Increment 2. In other words, what we have right now is for
12 our NOSC Light -- our NOSCs and our TCMs, we have mobile
13 capability, but it is capability placed on the family of
14 medium tactical vehicles. We can shrink those down. And
15 we have been able to do so. And that was just reported out
16 in the DOT&E test that was released just recently with
17 respect to NOSC Light and TCM Light. We owe that
18 capability on the move to our SBCTs and our IBCTs. We will
19 more forward with the purchasing of that.

20 The rest of the money with respect to the network is
21 going to go after the pivot and the fixed piece with
22 respect to where we are going. And I believe that you are
23 aware that obviously we know what we have to do in terms of
24 a network of the future. We have to find the transport
25 mechanism, the transport layer first. That was clear in

1 the IDA report, and that is where we are going after. We
2 have to modernize that piece. Once we get a transport
3 layer and we decide what that is going to be in the future,
4 we can then ensure that industry that wants to participate
5 in our network of the future is able to link in to those
6 standards and that architecture.

7 In the meantime, between that network of the future
8 and now, we have to continue to be able to fight tonight,
9 so that means fixing what we have, which is our current
10 strategy, and then buying incremental capabilities that we
11 are finding with respect to the soft community because we
12 have teamed greatly with them, as well as the Marine Corps,
13 and have several solution sets for the individual soldier
14 and battalion and below that we are going to move forward
15 to in terms of experimenting and prototyping to get at a
16 medium or an interim capability while we wait for that
17 next-generation network.

18 Senator Cotton: It seems like an area that is ripe
19 for commercial off-the-shelf solutions.

20 General Ostrowski: That is absolutely correct,
21 Senator. And the bottom line is that is exactly where we
22 are going. Eventually, we would like to hopefully get to a
23 point where we can buy this as a service. Now, that is the
24 Chief's vision. That is where we are trying to push this
25 things towards, and that is why we want to continue to give

1 problem statements to industry as opposed to being very
2 specific with respect to our requirements. Allow them the
3 freedom to be able to offer solution sets based on what
4 they know in terms of the capable and reasonable in terms
5 of technology.

6 Senator Cotton: General Anderson, I saw you nodding
7 vigorously. Would you like to add anything?

8 General Anderson: No, sir. Watching this for a
9 couple years and all the testing which you just said, it is
10 as plain as day. The stuff is out there, and we are trying
11 to reinvent the wheel. And, you know, the Net Warrior is
12 the perfect example, a phone with apps. Soldiers love it.

13 Senator Cotton: So if we could go back in time, we
14 could just buy every soldier a smartphone and put some apps
15 on it?

16 General Anderson: Just like your AT&T bill, do it for
17 our soldiers, a personal device.

18 General Murray: That is one of the big initiatives,
19 right? So they did not love it when it was a classified
20 network, so one of the things we are looking at is how far
21 down do classified networks need to go so the secure but
22 unclassified network opens up all kinds of possibilities.
23 You talk about commercial purchases. I mean, the key piece
24 of Net Warrior is a mobile phone you can buy, you know, in
25 the kiosk on the corner. I mean, that is the key piece of

1 technology that is in that Net Warrior system.

2 Senator Cotton: Okay. A seventh priority, let us get
3 down to the frontlines, soldier lethality. General Murray,
4 there has been a proliferation of body armor, specifically
5 Russian and Chinese, specifically designed to defeat
6 traditional 5.56 NATO ammunition, which is of course what
7 our soldiers fire from their M4s. What are we doing to
8 address what is a very serious issue for the soldier on the
9 frontlines?

10 General Murray: So we have several efforts ongoing,
11 Senator. The first one would be the squad designated
12 marksman rifle, which is the near-term gap. So that has a
13 7.62 capability that gives us the ability to penetrate the
14 most advanced body armor in the world, along with the
15 advanced armor piercing round that is in development. We
16 are accelerating the SDMR or the squad designated marksman
17 rifle to '18, so we will start fielding that in '18. We
18 had hoped to accelerate the ADVAP round, the advanced armor
19 piercing round, to '18 as well to line up with that, but we
20 are about a year off, so we will develop that ammo, field
21 it in '19. You can still fire 7.62 and you can still
22 penetrate. You just cannot get quite the range you will
23 with the next-generation round. That is phase 1.

24 Phase 2 is the development of what we are calling the
25 next-generation squad weapon. The first iteration will

1 probably be an automatic rifle to replace the SAW, which is
2 also a 5.56. We have been pushed on the M27, which the
3 Marine Corps has adopted. That is also a 5.56, which does
4 not penetrate, so we are going to go down the path of next-
5 generation squad weapon automatic rifle first to be closely
6 followed, I am hopeful, for either a rifle or a carbine
7 that will fire something other than a 5.56. It probably
8 will not be a 7.62. It will probably be something in
9 between. Case telescoping round, probably polymer casing
10 to reduce the weight of it.

11 We have in the S&T community a demonstration weapon
12 right now. It is too big; it is too heavy. But we have
13 recently opened it up to commercial industry for them to
14 come in with their ideas about how they would get to that.
15 We have offered them some money to come in and prototype
16 for us that type of weapon. We believe with that weapon
17 with the new ammo we can achieve probably weights similar
18 to the M4 5.56 ammo. The weapon will probably weigh a
19 little bit more, the ammo will probably weigh a little bit
20 less, and we can get penetration of the most advanced body
21 armor in the world, probably well beyond even the max
22 effective range of the current M4. And that is what we see
23 as a replacement for the M4 in the future, not the SDMR.

24 Senator King: What is the time frame on that?

25 Senator Cotton: I think he said 2018 for the SDMR.

1 General Murray: When we started off -- and, Paul, you
2 can correct me -- I think we were out around '25 or '26,
3 and I think we are back to about '23 now.

4 General Ostrowski: Yes, I would just say that between
5 the S&T effort that we have ongoing with Textron and the
6 OTA, other transaction authority, that we are going to
7 offer to other vendors in '18, the intent is to try to do a
8 fly-off between those particular companies by the end of
9 '21 in order to provide some kind of capability by '22 or
10 '23 at the latest.

11 Senator Cotton: What was 2018? Was that the new
12 squad designated marksman rifle?

13 General Murray: Correct.

14 Senator Cotton: And how does that differ from the
15 rifle that was carried the last decade in Iraq and
16 Afghanistan I think was in '14?

17 General Murray: The EBR. It is a much better -- the
18 EBR was a modified and adopted M14, which was -- it never
19 got -- I mean, it looked significantly different than
20 anything else in the squad, so if you carried it, you
21 looked like a target. This rifle was basically a variation
22 of a sniper rifle so it is very accurate, but it is also
23 capable of automatic fire.

24 General Ostrowski: It certainly looks a lot like an
25 M4.

1 Senator Cotton: Okay. General Dyess, any thoughts
2 beyond simply this question about penetrating Russian and
3 Chinese armor, any broader thoughts about standard infantry
4 squad kit and changes that might be coming to it?

5 General Dyess: There are a couple things, Senator.
6 Night vision devices, I think that there is some activity
7 that could go on there. And expanding the combat footprint
8 of whatever size unit, let us say a squad or a platoon.
9 The use of a small micro or quadcopters for air, which is a
10 much less complicated environment than on the ground. I
11 think that there will be most likely some ground robotics
12 that are out there, but it is a much more complicated area
13 than in the air. So I think that you will see maybe some
14 expansion of the battle space and maybe awareness of small
15 units and night vision are two other areas that I think on
16 the soldier lethality part.

17 Senator Cotton: Putting the second one in layman's
18 terms, a little drone with a camera on it?

19 General Dyess: That is correct.

20 General Murray: And that is the equipment piece. And
21 I mean, there is also a significant effort going on in
22 terms of treating the rifle squad as a weapons system. So
23 we have continued to improve our own body armor, to
24 lightweight it, to make it better. The weapons you have
25 talked about, not only small arms but automatic weapons,

1 antitank weapons, the Carl Gustaf, lightweighting that, and
2 then probably as importantly is the nonmaterial solution,
3 so how do we provide holistic fitness to, you know, what
4 the Army exists to do, close with and destroy the enemy?
5 How do we provide, you know, a -- get the best and
6 brightest and then provide them the holistic health and
7 fitness and training materials? So in terms of simulations
8 and synthetic training environments and how do you allow
9 them to do multiple reps in some sort of very realistic
10 synthetic environment so they get 100 reps before they go
11 to battle for the first time?

12 Senator Cotton: If I could just dig a little bit more
13 on that because it was my last question on this topic about
14 outfitting the infantry squad, infantry platoon for enemy
15 tanks and enemy attack aircraft. Obviously, that is not a
16 consideration that has been foremost on our minds over the
17 last 17 years on the modern battlefield. I mean, AT4s have
18 been more about thinking who has to carry it in the STX
19 lane. But if we are facing Russian and Chinese threats,
20 they are obviously going to have main battle tanks and
21 attack aviation, so could you just be a little more
22 detailed about that, General Murray?

23 General Murray: Yes, sir. And so I would start off
24 by saying that no rifle squad fights by itself, and, you
25 know, our experience in Iraq and Afghanistan I would never

1 hesitate to send out a platoon by itself, but I never would
2 send out a squad by itself just because of the combined
3 arms effects of larger formations. If we are fighting that
4 type of foe, I would guess in an ABCT I have got lots of
5 antitank weapons, ways to deal with enemy tanks, SBCT less
6 so but I have still got javelins and other ways of dealing
7 with it. So really, the focus is the IBCTs, and that was
8 part of the reason, although not designed to be toe-to-toe
9 with a Soviet tank, is the mobile protective firepower to
10 give the light IBCTs some ability to deal with targets that
11 they are not organically equipped to do.

12 Senator Cotton: It is going to be down to the platoon
13 level or --

14 General Murray: It depends on how the commander
15 organizes them. It is one company per brigade, so it would
16 depend on where that platoon was. And then there are other
17 things like attack aviation that obviously can deal with --

18 Senator Cotton: Okay. General Anderson, one final
19 modernization priority I would like to turn to you on -- it
20 was not addressed to my knowledge at the AUSA by Secretary
21 McCarthy or General Milley -- that is electronic warfare,
22 Russian doctrine that is publicly available, say they view
23 that as key asymmetric advantage against their adversary,
24 namely us, both offensive and defensive. So, first,
25 correct me if I am wrong but I do not think it was

1 addressed by General Milley or Secretary McCarthy. And if
2 I am not wrong, why it was not, but also just give us an
3 update on what the Army is doing to reconstitute electronic
4 warfare forces and capabilities.

5 General Anderson: It is all things multi-domain, sir,
6 and trying to get a strategy, you know, all things
7 electromagnetic spectrum. So we have still got a couple
8 stovepipes here between the E.W. community, the cyber
9 community, the signal community, you know, and how do we
10 achieve effects, and that is why this I.Q. as we establish
11 an intel, cyber, electronic warfare space cell that we are
12 going to task-organize with 17 fire so you have got the
13 lethal piece, and then you are going to attack this new --
14 different icons to get synergy between those capabilities,
15 and then we will go test it, as Bo was talking about, out
16 in Pacific pathways and the exercises to figure out what we
17 can do. You know, but all we are doing right now in Europe
18 is through the Rapid Capabilities Office is taking
19 different electronic warfare kit, putting it together, and
20 trying to again -- it is a jamming capability. But the
21 reason why electronic warfare is so important, if you
22 cannot find where the stuff is emitting from, it does not
23 matter because the jammer will not be able to figure that
24 out. That is why the synergy between the two are so
25 critical.

1 Senator Cotton: Okay.

2 General Ostrowski: I would just add, Senator, that
3 the Rapid Capabilities Office has put situational
4 understanding capability in Europe now, okay? What we have
5 is one platoon per brigade with respect to the second ACR,
6 two on ABCT and 173rd Airborne Division. But what we have,
7 sir, is a couple of different items. One is a VROD/VMAX
8 which is a ground-based, soldier-based dismounted system
9 that is able to D.F. signals of interest.

10 Sabre Fury is another capability. It is a mounted
11 platform on a Striker, for instance, that also has line of
12 bearing. And through that, the combination of those two
13 efforts, along with Raven Claw, which basically is the
14 computer that puts it all together, we have commanders able
15 to have the situational understanding of signals of
16 interest in their area. They then have the opportunity to
17 do two things, either strike that particular capability
18 with respect to indirect fires or they have the ability to
19 jam it, a limited jamming capability. However, it is
20 limited in terms of its jamming capability. And that is
21 the concern that we have. It does not stand up to what our
22 foes, our near-peer and peer competitors, have in terms of
23 their inventories, and that is the crux of the problem. We
24 have taken risk in this area for too long.

25 General Murray: And I think to add on to General

1 Ostrowski, so none of that is the program of record. I
2 think that is a great example, and it is really our Rapid
3 Capability Office that is doing the prototyping and the
4 demonstrating before we write a requirements document so we
5 fully understand what is available and what it is we need.

6 Senator Cotton: Okay. Senator King?

7 Senator King: One other question, as we were talking
8 about all these systems, do you have any systematic red-
9 team approach to trying to find flaws? In other words,
10 somebody whose job it is to say why this will not work and
11 to attempt to prove it, is that built into the system? I
12 think that is often a valuable approach.

13 General Murray: There are plenty of people who say
14 this will not work, and our Chief of Staff is probably, you
15 know, first and foremost --

16 [Laughter.]

17 Senator King: That is --

18 General Murray: But I am actually honest, Senator.
19 So, you know, the one thing that has changed since I think
20 it was NDAA '16 that the Chief back, you know, into the
21 acquisition process --

22 Senator King: In the process.

23 General Murray: -- is that there is one person in the
24 Army that questions our requirements and questions, you
25 know, how fast we are going, whether what we do will

1 actually work. It is the Chief. I mean, he is very
2 involved. So if that was the intent of Congress to get the
3 Army senior leaders involved in the requirements, in the
4 acquisition process, it absolutely worked.

5 In terms of a formal red team, I mean, there is
6 nothing I am tracking -- Bo, you would know better in the
7 requirements --

8 General Dyess: Just the experimental stuff, sir, that
9 we do, where we put things in the hands of soldiers, and
10 they have no restrictions in telling us what they think,
11 and thank goodness for that.

12 General Anderson: If I could add, Senator, that was
13 one of the benefits of not having a dedicated brigade for
14 testing. The last summer we did a test, we used a
15 nonstandard brigade, and the soldiers were not afraid to
16 say -- they were not used to doing NIEs every year. It was
17 not the same unit, so when you introduced a new unit, they
18 gave a lot more different perspectives than the unit at
19 Fort Bliss did because they had seen this stuff multiple
20 times, so there are benefits to rotating who the test unit
21 is to get new hands on the equipment, new eyes on the kit,
22 et cetera.

23 Senator King: I think that is an important part of
24 the process.

25 General Anderson: We did not see it that way at

1 first, but it fell out that way.

2 Senator King: Thank you. Thank you, Mr. Chairman.

3 Senator Cotton: The Chief has been very focused on
4 these problems, and I think he has brought a very dynamic
5 leadership to them. I remember when he first came on and
6 we were speaking about the new Army pistol RFP, which was
7 350 pages, and he suggested that maybe we should just go to
8 Fort Bragg and get a few gun lovers there to ask them what
9 the best ones are and then go to Walmart or Cabela's and
10 buy 50,000 of them. So we did not exactly do that --

11 Senator King: We can get a deal, too.

12 Senator Cotton: Yes, we did not exactly do that, but
13 it was much better than the 350-page RFP.

14 So I will close with the lesson that you can take away
15 from that, I think. You know, Army doctrine says that
16 leadership is the most dynamic element of combat power.
17 Secretary Gates in his memoir of his time at the Department
18 of Defense wrote about the relationship between Congress
19 and senior department managers. Congress can only do so
20 much. We can provide you the budgetary resources you need
21 and some legal authorities, but usually, when Congress
22 tries to solve a problem, it solves it with a meat cleaver,
23 not a scalpel. And in the end there is no substitute for
24 leadership from the Secretary on down to the general
25 officers and the programmatic leaders, and we really do

1 depend on all of you and the men and women who work
2 alongside you in the Department. So I want to commend you
3 for the efforts that you have undertaken and encourage you
4 to continue to do so to make sure that our modernization
5 needs are fully met.

6 General Dyess, I assume this is your final testimony
7 in front of the Congress?

8 General Dyess: Sir, I have not received any other
9 notices yet.

10 [Laughter.]

11 Senator Cotton: General Murray, General Anderson,
12 will this be your final appearance for some time?

13 General Anderson: My fate is undetermined, Senator.

14 General Murray: And mine as well, but if I have
15 anything to do with it, yes, sir.

16 [Laughter.]

17 Senator Cotton: I will ask, so you are undetermined
18 but General Dyess is not. I will ask you what is
19 preferable, a day-one Ranger School recycle or
20 congressional testimony?

21 General Dyess: I would rather come over here and talk
22 to you, Senator.

23 [Laughter.]

24 Senator Cotton: All right. Gentlemen, thank you very
25 much for your service to the country. Thank you for your

1 appearance and your testimony. This hearing is adjourned.

2 [Whereupon, at 5:16 p.m., the hearing was adjourned.]

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