

Stenographic Transcript  
Before the

Subcommittee on Seapower

COMMITTEE ON  
ARMED SERVICES

## **UNITED STATES SENATE**

HEARING TO RECEIVE TESTIMONY ON NAVY AND MARINE  
CORPS AVIATION PROGRAMS IN REVIEW OF THE DEFENSE  
AUTHORIZATION REQUEST FOR FISCAL YEAR 2019 AND THE  
FUTURE YEARS DEFENSE PROGRAM

Tuesday, March 6, 2018

Washington, D.C.

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1 HEARING TO RECEIVE TESTIMONY ON  
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8 U.S. Senate  
9 Subcommittee on Seapower  
10 Committee on Armed Services  
11 Washington, D.C.  
12

13 The subcommittee met, pursuant to notice, at 2:31 p.m.  
14 in Room SR-232A, Russell Senate Office Building, Hon. Roger  
15 F. Wicker, chairman of the subcommittee, presiding.

16 Subcommittee Members Present: Senators Wicker  
17 [presiding], Cotton, Rounds, Tillis, Sullivan, Hirono,  
18 Blumenthal, Kaine, and King.  
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1           OPENING STATEMENT OF HON. ROGER F. WICKER, U.S.  
2           SENATOR FROM MISSISSIPPI

3           Senator Wicker: This hearing will come to order.  
4           The Senate Armed Services Subcommittee on Seapower  
5           meets this afternoon to examine Navy and Marine Corps  
6           aviation programs.

7           Our subcommittee welcomes three distinguished  
8           witnesses: Vice Admiral Paul A. Grosklags, Commander of  
9           Naval Air Systems Command; Lieutenant General Steven Rudder,  
10          Deputy Commandant for Marine Corps Aviation; and Rear  
11          Admiral Scott Conn, Director of Air Warfare at the  
12          Department of the Navy.

13          Our subcommittee is grateful to each of you gentlemen  
14          for your service to our nation.

15          I would like to offer a special welcome to Admiral Conn  
16          and General Rudder who are testifying to this subcommittee  
17          for the first time. And there is speculation, Vice Admiral  
18          Grosklags, that you are testifying before the subcommittee  
19          for the last time. Is that correct?

20          Admiral Grosklags: There is a rumor, sir.

21          Senator Wicker: There is a rumor to that effect.  
22          Well, we will see about that.

23          Last year subcommittee hearings on naval aviation  
24          programs were productive. Since then, the Department of  
25          Defense has articulated a bold, new National Defense

1 Strategy. In particular, the NDS focuses on preparing for  
2 long-term security challenges, notably the ability to wage  
3 high-end fights against near-peer competitors such as China  
4 and Russia. I look forward to hearing how Navy and Marine  
5 Corps aviation will meet the direction of this new strategy.

6 Years of continuous combat operations and inadequate  
7 funding have put the Navy and Marine Corps aviation into a  
8 hole from which they are only now beginning to recover.  
9 Congress shares the blame, but we are beginning to turn  
10 things around. The 2-year budget agreement signed by  
11 President Trump in February will help provide much needed  
12 stability and relief. In a matter of weeks, Congress should  
13 take the next by ending the cycle of continuing resolutions  
14 with an fiscal year 2018 appropriation bill that funds the  
15 Department of Defense at much higher levels. DOD's fiscal  
16 year 2019 budget request also matches the fiscal year 2019  
17 level set by the budget agreement.

18 Our witnesses should address how the budget helps  
19 restore full spectrum readiness and supports modernization.  
20 Secretary Mattis, Secretary Spencer, and General Neller have  
21 stated that improving readiness should occur simultaneously  
22 with efforts to modernize forces for future challenges.

23 This afternoon, our subcommittee will examine five key  
24 areas relating to Navy and Marine Corps aviation programs.

25 First, physiological episodes. The subcommittee

1 remains deeply concerned by the continued occurrence of  
2 physiological episodes within the military aviation  
3 community. We recognize naval aviation's mitigation efforts  
4 particularly in the T-45 trainer aircraft, but we remain  
5 frustrated by the overall pace of progress. The  
6 subcommittee is eager to understand how the Navy and Marine  
7 Corps are handling the continuing problem and how the  
8 President's budget request advances efforts to discover root  
9 causes while implementing mitigations and solutions. The  
10 safety of our Navy and Marine Corps aviators is of course  
11 paramount.

12       Next, aircraft readiness. The Navy and Marine Corps  
13 continue to fall short in the required number of ready basic  
14 aircraft. Witnesses should outline the steps the Navy and  
15 Marine Corps are taking to arrest and reverse the decline in  
16 aircraft readiness.

17       Next, strike fighter shortfall. Our subcommittee would  
18 also like to learn more about gaps in the Navy fighter fleet  
19 and the Navy's plans to close them, including through legacy  
20 Hornet retirement, new Super Hornet procurement, and  
21 preparations for the service life extension program for  
22 existing Super Hornets.

23       Next, joint strike fighter operations. The  
24 subcommittee also wants to understand the development and  
25 operations of the F-35B and F-35C joint strike fighter.

1 Last year, the Green Knights of VMFA 121 permanently changed  
2 their home station to Iwakuni, Japan and just completed the  
3 first F-35 shipboard deployment. The Joint Program Office  
4 is currently revamping its plan for F-35 modernization and  
5 is examining how to make the sustainment of the aircraft  
6 affordable. The subcommittee looks forward to hearing an  
7 update on the F-35 operations and the challenges associated  
8 with modernization and sustainment.

9 And then finally, munitions shortfall. Our  
10 subcommittee would like an update on the status of the Navy  
11 and Marine Corps' air-launched munitions inventories. We  
12 remain concerned that inventories of many of our weapons are  
13 critically low. At the same time, technological advances by  
14 our potential adversaries require us to modernize our  
15 munitions to remain relevant. The subcommittee needs to  
16 understand if we have enough munitions and, more  
17 importantly, if we have enough of the munitions required to  
18 fulfill the National Defense Strategy to be prepared for the  
19 high-end fight.

20 So a lot to talk about. And once again, I want to  
21 thank our witnesses for their service and for appearing  
22 before us today.

23 I am delighted to recognize at this point our ranking  
24 member and my teammate in this regard, Senator Hirono.

25

1 STATEMENT OF HON. MAZIE K. HIRONO, U.S. SENATOR FROM  
2 HAWAII

3 Senator Hirono: Thank you, Mr. Chairman.

4 Welcome to our witnesses. Thank you all for your  
5 service.

6 In today's discussion, we will examine how the  
7 Department of the Navy's fiscal year 2019 budget request for  
8 Navy and Marine Corps aviation programs would help increase  
9 readiness, address shortfalls in munitions, pilots and  
10 maintenance personnel, and modernize our maritime strike and  
11 expeditionary power projection capability, all of which have  
12 already been mentioned by the chairman.

13 Navy and Marine Corps aviation programs play a critical  
14 role in supporting and advancing our country's strategic  
15 interests in the Indo-Asia-Pacific region, including from  
16 bases in Hawaii. We face a number of complex threats around  
17 the world, and we need to consider the best way to get the  
18 Navy and Marine Corps the resources they need to confront  
19 these threats. At the same time, it is critical that any  
20 increase in these resources does not come at the expense of  
21 important domestic programs that families, including our  
22 military families, rely on every day.

23 In this request, the administration has submitted a  
24 budget that is consistent with the top line agreement for  
25 fiscal year 2019. As we meet today, we still do not have a

1 final appropriation for fiscal year 2018. This is  
2 unacceptable, and we need to return to a more normal  
3 appropriations schedule and process.

4 As we consider the 2019 budget, we also need to  
5 consider the significant challenges we face in naval  
6 aviation. In particular, we need to hear more about how the  
7 new National Defense Strategy will impact the Department of  
8 the Navy's aviation programs.

9 Navy and Marine Corps pilots have been experiencing  
10 problems with the environmental control system in certain  
11 aircraft, mainly F-18's and T-45's, that have resulted in  
12 what is referred to as physiological episodes, also referred  
13 to by the chairman.

14 In recent years, naval aviation has been challenged to  
15 meet current demands by a high operational tempo and  
16 uncertainty in the fiscal environment. We need to hear from  
17 the services what progress is being made to address these  
18 problems.

19 I would also like to discuss what the Department of the  
20 Navy is doing to address corrosion, a significant issue that  
21 costs the Department \$20 billion a year. I was happy to see  
22 in the fiscal year 2019 budget a request including a  
23 military construction for a \$66 million corrosion control  
24 hangar at Marine Corps Air Station Kaneohe Bay. I will  
25 continue to support efforts to help prevent and treat



1 corrosion to mitigate its impact on the readiness of our  
2 forces.

3 This hearing will also provide a chance to discuss some  
4 of the ongoing issues in the F-35 program, particularly how  
5 testing is proceeding and the timing of the Navy's initial  
6 operating capability declaration. I am also interested in  
7 learning more about how the Navy and Marine Corps view the  
8 F-35 Joint Program Office's plans to modernize the F-35  
9 fleets.

10 At a time when we face a major shortfall in the Navy's  
11 strike fighter inventory, I would like an update on any  
12 progress the Navy is making to address this situation. A  
13 few years ago the Navy responded to forecasts of a shortage  
14 of almost 200 aircraft by trying to better manage the  
15 remaining life of the existing aircraft. They have done  
16 this by redistributing aircraft within the force, designing  
17 a series of maintenance and rehabilitation measures,  
18 including a service life extension program, or SLEP, for  
19 older aircraft and buying new F-18 aircraft. The Navy has  
20 predicted that SLEP would lead to significant improvements  
21 in its ability to support operating forces, such as aircraft  
22 carrier squadrons and Marine Corps squadrons, for several  
23 years.

24 This year, however, the Navy is still having difficulty  
25 moving F-18 aircraft through the SLEP lines, which means

1 that fleet squadrons are having to make do with fewer  
2 aircraft. This puts a strain on the whole system. We need  
3 some clarity about what actions the Navy is taking to  
4 improve the situation.

5 I would also like to hear about the investments the  
6 Navy and Marine Corps are making in training and maintenance  
7 operations.

8 Thank you again, Mr. Chairman, and I look forward to  
9 hearing from our witnesses.

10 Senator Wicker: Thank you very much, Senator Hirono.

11 We will begin with testimony from Vice Admiral  
12 Grosklags.

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1           STATEMENT OF VICE ADMIRAL PAUL A. GROSKLAGS, USN,  
2           COMMANDER, NAVAL AIR SYSTEMS COMMAND

3           Admiral Grosklags: Thank you, Mr. Chairman. The  
4           intent is to make a single opening statement for the entire  
5           panel.

6           Senator Wicker: Well, I am glad I called on you first.

7           [Laughter.]

8           Admiral Grosklags: Well, I could have passed it on to  
9           somebody else.

10          [Laughter.]

11          Mr. Chairman, thank you, and Ranking Member Hirono and  
12          distinguished subcommittee members. Along with myself,  
13          General Rudder, and Rear Admiral Conn, we appreciate the  
14          opportunity to be here today to talk about naval aviation  
15          and our PB-19 budget request.

16          We believe that PB-19 budget request is very well  
17          aligned with and supportive of the National Defense  
18          Strategy. Our ability to achieve this alignment is greatly  
19          facilitated by the additional budget flexibility provided by  
20          the recent bipartisan budget agreement. The lethality which  
21          naval aviation brings to bear in support of our nation's  
22          interests will be greatly enhanced by the increased  
23          procurement numbers for aircraft, weapons, increased  
24          investment and development of new and advanced capabilities,  
25          and increased funding for our critical readiness and

1 sustainment accounts. Our alliances and partnerships will  
2 continue to be strengthened through an ever-increasing  
3 number of international cooperative and FMS programs such as  
4 P-8, Triton, V-22, and H-1, F-35 certainly.

5         And the need to transform our business and acquisition  
6 processes is being directly addressed with investments in  
7 agile, accelerated capabilities-based acquisition,  
8 leveraging authorities provided by the Congress in the  
9 fiscal year 2016 through 2018 NDAA's and investment in naval  
10 aviation sustainment Vision 2020, which will leverage  
11 commercial tool sets and best practices in making  
12 fundamental changes to the processes by which we plan and  
13 execute aviation sustainment activities.

14         And while this is a fiscal year 2019 budget hearing, it  
15 is important to note that the additional funding which  
16 appears will be provided in the fiscal year 2018 budget is  
17 just as critical to our ability to align with the National  
18 Defense Strategy, and while this is broadly true for the  
19 entire Department, it is especially critical for naval  
20 aviation, specifically the support for additional aircraft,  
21 such as F-18's, F-35s, V-22's, H-1's, 53 helos, P-8's,  
22 KC-130J's, additional weapons such as LRASM, Sidewinder,  
23 Harpoon block 2-plus, and additional funding for our  
24 critical readiness accounts, such as spares, depot  
25 maintenance, program-related logistics, will put us on the

1 proper glide slope to National Defense Strategy alignment.

2       However, it is important to note that we must get this  
3 funding soon for it to be most effectively utilized during  
4 this fiscal year, although I also note with appreciation  
5 that there are many members of this subcommittee who have  
6 requested some additional flexibility be provided by the  
7 appropriators in our execution of those dollars in fiscal  
8 year 2018.

9       I would also be remiss if I did not mention the  
10 continuing challenge we face with physiological episodes  
11 that both of you mentioned in your opening statements. This  
12 remains naval aviation's top safety issue and has our full  
13 attention. While we have made clear progress in some areas,  
14 solutions to the broader problem still remain frustratingly  
15 illusive.

16       In parallel with pursuit of root causes, we are  
17 continuing implementation of hardware, software, and  
18 procedural mitigations. We are conducting additional flight  
19 testing and system characterization, and following NASA's  
20 independent review of last year, we have a greatly increased  
21 focus on aircrew physiology and the operational environment.

22       Full funding of the PB-19 PE request is critical to  
23 continuation of these efforts, and we will continue to keep  
24 the subcommittee informed on our progress until this issue  
25 is resolved.

1           So in closing, thank you again for your efforts in  
2 reaching the current budget agreement and for your  
3 continuing support of our sailors and marines. And we look  
4 forward to answering your questions.

5           [The prepared statement of Admiral Grosklags, General  
6 Rudder, and Admiral Conn follows:]

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1 Senator Wicker: Thank you very much, Admiral.

2 Let us talk then about the budget. Tell us what this  
3 added flexibility would do for you, and how is the  
4 additional funding going to assist the Navy and Marine Corps  
5 in modernization and readiness restoration? What will you  
6 be able to do extra that you have not been able to do? And  
7 please give us some specific examples.

8 Admiral Grosklags: Mr. Chairman, I will give it a  
9 start and let my colleagues join in as well.

10 So a couple of things. On the modernization front, you  
11 could use MQ-25 as an example, our carrier-based refueling  
12 platform. We added an additional \$250 million approximately  
13 over what we had planned in 2018 to our fiscal year 2019  
14 request. That allows us to accelerate the initial  
15 operational capability of that platform by 2 years. So that  
16 is a specific example on modernization.

17 On the readiness front, our readiness accounts are  
18 funded in the PB-19 request to between 92 and 100 percent,  
19 which is across the board a level at which they have not  
20 been funded for over a decade. So there is significant  
21 progress we are going to be able to make in terms of  
22 improving our facilities at our depots, in terms of making  
23 sure that the publications and the support equipment that  
24 our sailors and marines need to maintain the aircraft on the  
25 flight line are up to date and of the highest quality. And

1 we have also been able initiate the funding for Vision 2020,  
2 our sustainment plan for the future, which I mentioned in my  
3 opening statement. Those are additional things that we are  
4 doing in fiscal year 2019 that we did not have in previous  
5 years.

6 Senator Wicker: Lieutenant General Rudder, what can  
7 you add?

8 General Rudder: Senator, thank you.

9 Simply put, I think what it allows us to do is the  
10 things that Admiral Grosklags talked about. But what it  
11 does, if you look at, as you appropriately stated, the  
12 Commandant's priorities as far as modernization and  
13 readiness and doing them at the same time, is just that.  
14 Before we were underfunding our readiness accounts to buy  
15 new airplanes, and we were not buying enough new airplanes.

16 With the budget that this committee and Congress is  
17 providing now, it allows us to do both. And it allows us to  
18 do both, modernizing our depot, hiring the right people,  
19 getting the right people in the right place at the right  
20 time in our depots. It allows us to train. It allows to  
21 buy the spares, fully fund our spares accounts, our parts,  
22 which they have never been funded to the levels before. But  
23 it also allows us to buy F-35's and CH-53K. For us, as we  
24 begin to ramp out of MV-22 and H-1's, we begin to ramp up  
25 into these new airframes to fulfill the new National Defense



1 Strategy, it increases our lethality certainly with those  
2 particular airframes.

3 While this is being done, it allows us to do this in  
4 stride. And in stride means that we have sailors and  
5 marines currently right now in combat operations and forward  
6 in Asia that are conducting high tempo operations. We have,  
7 for example, MAG-31 right now out of South Carolina. They  
8 have two squadrons. One squadron is in Asia. One squadron  
9 is in CENTCOM theater, and one squadron is on the ship. And  
10 I have two squadrons that are getting ready to go. That  
11 flight line for a period of time will be empty. The  
12 readiness accounts to make sure those jets and pilots have  
13 the right flight time to get out the door. And that is  
14 exactly what this budget this past couple years, starting  
15 with the RA in 2017, has allowed us to do.

16 Senator Wicker: Rear Admiral Conn?

17 Admiral Conn: Thank you, sir.

18 I would say the overall funding level has taken us away  
19 from simply managing risk to now to have the funds available  
20 to manage the opportunities that are presented to us.

21 For some specifics in terms of what the funding level  
22 has provided, additional funding, our MQ-25 in 2019, has  
23 allowed us to pull that IOC to no later than 2026 and  
24 potentially as early as 2024. We have been able to get our  
25 CMV-22 replacement aircraft in line, getting out of the C-2

1 aircraft earlier, up to be divested of that aircraft by 2024  
2 which has divested 28 PMIs that we need for that airplane,  
3 \$8 million in engines, totaling \$60 million that outside the  
4 FYDP what we are able to roll into the CMV-22 program.

5 It has also afforded us an opportunity to put \$240  
6 million into our next training system, live virtual  
7 constructive, which will offer us a new way to train to  
8 fight and win that high-end fight that you described  
9 earlier.

10 Senator Wicker: Thank you very much.

11 Senator Hirono?

12 Senator Hirono: Thank you.

13 General Rudder, Admiral Grosklags, and Admiral Conn, we  
14 all have been concerned, as both of us have mentioned, about  
15 aircrews experiencing physiological events apparently caused  
16 by aircraft environmental control systems. I understand  
17 that you are still trying to isolate or to identify the  
18 causes of these problems. Can you describe what progress  
19 you are making in solving these physiological problems? And  
20 what can you tell us about the fact that the Air Force  
21 grounded the T-6 trainer aircraft, but the Navy chose not to  
22 ground its T-6 trainer aircraft? Why did the Air Force  
23 ground that aircraft and you did not?

24 Admiral Grosklags: Senator, I will start and again let  
25 my colleagues jump in here.

1 I go into T-6 first where you ended. During the month  
2 of January and early into February, the Air Force had 19  
3 physiological events -- I believe that is the correct number  
4 -- in their T-6's, which is why they grounded the aircraft.  
5 During that same time period, the Department of the Navy had  
6 a total of two. So we are staying in very close contact  
7 with the Air Force.

8 We are taking steps with our T-6's to make sure we  
9 understand the environment, both the cockpit, the quality of  
10 the air in the cockpit both on the ground and in flight. So  
11 we are doing testing with that both at our fleet sites, as  
12 well as Patuxent River. And we are also working with the  
13 Air Force to replace a component in the oxygen generating  
14 system that will give the system greater reliability and  
15 also allow us to do some actual in-flight monitoring.

16 So we did not have the same problems of incidence that  
17 the Air Force had. So we are watching it closely and  
18 working very closely with them to make sure we stay in sync.

19 Senator Hirono: Do I understand you to say that  
20 because the Air Force experienced many more physiological  
21 events, that you are also looking at what was going on with  
22 their aircraft an the environment in their aircraft as  
23 different from the environment of the aircraft in the Navy?

24 Admiral Grosklags: No, ma'am. We are looking at our  
25 aircraft specifically. The Air Force is doing the same type

1 of testing, evaluation of the air quality in their T-6's.

2 Senator Hirono: But is it not the same aircraft,  
3 though?

4 Admiral Grosklags: It is. They fly primarily the A  
5 model. We fly primarily the B model. But the oxygen  
6 generating system and the environmental system is  
7 essentially the same.

8 Senator Hirono: So my point is that you are learning  
9 from whatever the experience was with regard to the Air  
10 Force.

11 Admiral Grosklags: Yes, ma'am. Both ways.

12 Senator Hirono: The safety of our crew is very  
13 important.

14 Admiral Grosklags: On the T-45 front, we are back at  
15 full flight operations since September of last year on  
16 T-45's. Since September, we have had a total of seven  
17 incidents, seven physiological episodes since we resumed  
18 flying, basically one per month since then. That is the  
19 same rate we were experiencing back in 2012, 2013, and 2014  
20 when we started monitoring this issue closely. Of those  
21 seven, it is important to note two of them were mechanical  
22 failures of the aircraft. One was flight in a regime that  
23 was a known issue where we get low flow through the  
24 aircraft. One was a pilot error, and three were human  
25 physiological issues where the pilot was either sick, had a

1 sinus condition or some other condition. So the important  
2 point there is that we know what is occurring in that  
3 aircraft for each one of those, and within 24 to 48 hours,  
4 we are able to provide that feedback to the entire  
5 population of T-45 pilots so that they understand exactly  
6 what occurred and what we are doing about it.

7 Senator Hirono: Thank you.

8 Senator Wicker: Senator Hirono, I am going to give you  
9 plenty of time.

10 You are not saying, Admiral Grosklags, that we have  
11 gotten to root cause of what is going on with the T-45's.

12 Admiral Grosklags: Senator, one of the things that we  
13 found out, the primary thing we found out before we resumed  
14 flying last fall, was that there are certain environments,  
15 conditions during flight where if the power is reduced to  
16 too low of a setting in flight, that it reduces the flow of  
17 breathing gas from the oxygen generating system to the  
18 aircrew. We did not know that until we had put an  
19 additional sensor in the aircraft last summer while we were  
20 in the operational pause. Now that we know that, we can  
21 actually see when this is occurring in the aircraft. So  
22 that was one of the root causes, was that the pilots were  
23 not getting sufficient flow not specifically of oxygen but  
24 entire breathing gas was not getting sufficient pressure to  
25 flow to the masks.

1           Senator Wicker: Okay. So it sounds like you believe  
2 that you all have put your finger on the root problem in the  
3 T-45's.

4           Admiral Grosklags: Yes, sir, in the T-45. But we have  
5 not stopped trying to further mitigate the risk of operating  
6 in that environment. So we are doing things today such as  
7 turning up the wick on the engine so it operates at a little  
8 higher percentage so that the opportunity for the pilots to  
9 get into a flight condition where they get this low flow  
10 scenario is further reduced and further mitigated.

11          Senator Wicker: Okay, Mazie, go ahead and take another  
12 2 minutes because I cut in on you here.

13          Senator Hirono: Earlier this year, Secretary of  
14 Defense Mattis announced a new defense strategy that would  
15 shift the focus for planning defense capabilities from one  
16 focusing on smaller regional contingencies to one focusing  
17 on being able to deal with near-peer competitors like Russia  
18 and China. Secretary Mattis also told the Armed Services  
19 Committee that the fiscal year 2019 budget had been adjusted  
20 to reflect this change in strategy.

21          Could each of you describe how the Department of the  
22 Navy aviation programs have been changed to reflect the new  
23 strategy?

24          General Rudder: I think when the new defense strategy  
25 came out, we looked at that being developed as something

1 that we had to place all of our forward-deployed assets,  
2 sailors and marines, that technically if you look at the  
3 principles behind that, the contact, blunt, and surge kind  
4 of principles and foundation of it, as the Marine Corps  
5 inside force, we are technically for the most part in a  
6 contact phase on a regular basis.

7         So we had to think about that in a way that we had been  
8 thinking about for quite some time. The F-35's that just  
9 flew on the USS Wasp a few days ago that are now out there  
10 deployed for the first time -- this is a concept of having a  
11 forward force that has the capability to maintain contact  
12 and actually be able to use its new capabilities against a  
13 higher-peer competitor. The same with blunt and surge as  
14 far as looking at how we do the larger scale operations, how  
15 we rethink our exercises to begin to conform to a higher-end  
16 threat.

17         So we have been doing that over the past couple of  
18 years. The F-35 is one aspect of that. If we look at being  
19 able to do distributed operations in a contact or blunt  
20 force where we have to be able to maneuver the battle space,  
21 the MV-22 does that, but also the heavy lift CH-53K will do  
22 that for us as well to begin ramp-up production on that.

23         This year, you will see \$20 million in for our group 5  
24 unmanned system, the MUCS, and that is designed to provide  
25 -- to come off our amphibious ship to provide that forward

1    ISR, forward early warning to be able to connect the network  
2    of the amphibious force.

3           Senator Hirono:  Do either of you have anything to add,  
4    Admiral Grosklags or Admiral Conn?

5           Admiral Conn:  Yes, ma'am.  I think the National  
6    Defense Strategy in terms of impacting the Navy's budgeting,  
7    by recognizing a return to a great-power competition, as  
8    well as articulating the maritime responsibilities within  
9    that strategy and then the development of the Navy the  
10   nation needs, which is the maritime expression of that  
11   strategy for the CNO, within naval aviation, just as a  
12   caveat, within a carrier air wing allows us to build a  
13   bigger air wing.  It allows us to build a better air wing  
14   with F-35C, block 3 Super Hornets, MQ-25 in the future,  
15   CMV-22's, E-18G's with next generation jammer.  It is those  
16   family of systems that network together that is going to  
17   give us greater combat power and lethality operating from  
18   the sea.

19           Senator Hirono:  Thank you.

20           Thank you, Mr. Chairman.

21           Senator Wicker:  Thank you.

22           Senator Rounds?

23           Senator Rounds:  Thank you, Mr. Chairman.

24           I want to just focus on the F-35 to begin with for just  
25   a little bit.  And I am just curious.  I have seen the



1 review that we did that the F-35C -- you are going to be  
2 purchasing nine in 2019 and 16 in fiscal year 2020. And  
3 then the F-35B, which is the short takeoff and landing  
4 version -- you are looking at 20 in 2019 and 20 in fiscal  
5 year 2020. And I am just curious. I am presuming the  
6 Marines are using the short takeoff and landing, the B's.  
7 Is that correct that those will all be yours, sir?

8 General Rudder: That is correct. And out of the  
9 F-35C's, we have two Marine Corps because we are buying both  
10 variants.

11 Senator Rounds: So of the 35C's, how many are you  
12 buying of the carrier version, the F-35C's? How many are  
13 the Marine Corps purchasing in 2019 and 2020?

14 General Rudder: In fiscal year 2019, we have two out  
15 of that nine, and I believe we will have four or five or  
16 more, depending upon what the 2020 budget looks like, in  
17 2020, with a total of 67, which will allow us to have four  
18 carrier squadrons to fulfill our tactical air integration  
19 responsibilities with the Navy. So those aircraft will be  
20 in a cycle of carrier deployments as well.

21 Senator Rounds: So my assumption is the Navy will be  
22 primarily purchasing the F-35C's. Is that correct, sir?

23 Admiral Conn: That is correct, Senator.

24 Senator Rounds: Of the 35C's, how many are you  
25 intending then to purchase in 2019 and in 2020?

1           Admiral Conn: 2019 is seven, and 2020, depending on  
2 the 2020 top line, will be approximately 10 to 12 airplanes.

3           Senator Rounds: Does that fall in line with trying to  
4 get to the -- I am just thinking a lot about the production  
5 rate. Is that how many you want, or is that how many you  
6 can afford? Or what is the process for determining the  
7 number that you are going to put into effect?

8           Admiral Conn: Sir, the F-35C is a new platform. You  
9 have to transition a squadron. It takes up to a year, 9  
10 months for a pilot, almost a year to train those sailors.  
11 As you are growing a new type model series, you have to do  
12 it on a very deliberate pace where you first build your  
13 infrastructure, if you will, and your fleet replacement  
14 squadron is the squadron that trains those aviators and in  
15 some sense trains some of those maintenance so that when  
16 they are complete with that transition, they are ready to  
17 start the optimized fleet response plan in terms of being  
18 able to prepare for a deployment.

19           Senator Rounds: Are you on board -- is the Navy on  
20 board the F-35C as the right aircraft long term for the  
21 Navy's needs?

22           Admiral Conn: Yes, sir, we are.

23           Senator Rounds: So your goal is to acquire in such a  
24 fashion as to keep the price down. The more we buy and keep  
25 up to an appropriate production rate, the better off we are

1 going to be in terms of the actual price we are paying. I  
2 think we are in agreement on that?

3 Admiral Conn: Yes, sir, we are.

4 Senator Rounds: And is the F-35 being produced in the  
5 block numbers and with the appropriate anticipated software  
6 installed that you would have wanted, or is the manufacturer  
7 ahead of or behind in that regard?

8 Admiral Conn: For us to declare our initial operating  
9 capability, the aircraft has to be configured in block 3F  
10 and it has to be going through its IOT&E with the weapons  
11 and various sensors that have to perform in a threat-  
12 representative environment to the standards identified in  
13 the operational requirements document. When those  
14 conditions are met, we will declare IOC which will be well  
15 before the first deployment of the FA-47 in fiscal year  
16 2021.

17 Senator Rounds: So do you feel like you are on target  
18 with regard to the deployment of the F-35C?

19 Admiral Conn: Yes, sir, we do.

20 Senator Rounds: Okay, good.

21 General Rudder: Just one comment, Senator. We just  
22 accepted the first three 3F configured production model,  
23 VF-62 out in Yuma. So those are coming off the flight line  
24 right now, and I think this spring/early summer we will be  
25 able to insert 3F into most of our jets that are technical

1 refresh to capable.

2 Senator Rounds: Thank you.

3 I am just curious, and this is just as much so that you  
4 have a chance to tell the story. The MQ-25 -- can you share  
5 with the subcommittee the need and the value of that MQ-25  
6 and how valuable it is to the long-term operations?

7 Admiral Conn: Thank you for the question, Senator.

8 The value of the MQ-25 -- and I will be brief. It is  
9 going to expand the operational reach of the air wing in  
10 light of the potential scenarios that we may be engaged with  
11 as an in-flight refueling tanker, being able to give a  
12 certain amount of gas up to 500 miles away from the ship so  
13 those strike fighters can go forward, coupled with its ISR  
14 capabilities in terms of persistent stare, if you will,  
15 being able to collect information, process, and disseminate  
16 it back to the commanders to have a better operational  
17 picture that is operating around the carrier.

18 Senator Rounds: Fair to say it is just a very large  
19 Pacific Ocean.

20 Admiral Conn: That is correct, sir.

21 Senator Rounds: Thank you, Mr. Chairman.

22 Senator Hirono: On behalf of the chairman, I call on  
23 Senator King.

24 Senator King: Senator Hirono, did you say that we  
25 spend \$20 billion a year on corrosion?

1 Senator Hirono: Yes.

2 Senator King: That gives new meaning to the old rock  
3 song, "Rust Never Sleeps." It is unbelievable.

4 Under Secretary of Defense for Acquisition and  
5 Sustainment Ellen Lord has said that the sustainment costs  
6 for the F-35 will become unaffordable. I had a meeting  
7 recently with the Deputy Secretary of Defense. He said the  
8 same thing. Why is the F-35 so expensive to keep flying?  
9 Does anybody want to tackle that? Admiral?

10 Admiral Conn: I will start. From a warfighting  
11 perspective, we need the airplane.

12 Senator King: No doubt about that. I am just asking  
13 why does it cost so much to keep it going.

14 Admiral Conn: From an affordability aspect, we have to  
15 drive down the operating and sustainment costs. There is a  
16 30 percent reduction goal within 10 years --

17 Senator King: I understand that too. My question is,  
18 why is it so expensive? What is it about the airplane that  
19 is costing so much?

20 Admiral Conn: I think the fifth generation airplane in  
21 and of itself is an expensive airplane to procure.

22 Senator King: I know that. So I am going to ask  
23 again. This is your fourth time. Why is the F-35 so  
24 expensive to maintain?

25 Admiral Grosklags: Sir, I think I can help a little

1 bit here.

2 So the aircraft is very expensive. Period. So a lot  
3 of the parts on that aircraft are very expensive. So if a  
4 component fails, the repair costs at this time are quite  
5 high. We are still having to go back to the original  
6 equipment manufacturers for the repair of most of those  
7 components because the program collectively -- the  
8 collective was laid to stand up things like organic depot  
9 level repair capability. We are just now starting to stand  
10 up intermediate level capability. We are actually just  
11 starting to fund it in PB-19. That is one of the new things  
12 in 2019.

13 The reliability of some of the components is not as  
14 high as we expected it to be at this point in time. So we  
15 have more failures.

16 Senator King: Is the manufacturer responsible for  
17 those failures? What do we get for a warranty?

18 Admiral Grosklags: There is no warranty, sir.

19 Senator King: There is no warranty?

20 Admiral Grosklags: No, sir.

21 Senator King: You mean a product can be delivered to  
22 us that costs 100 million bucks, and if it fails, it is on  
23 us?

24 Admiral Grosklags: There are some criteria in the  
25 contract, sir. There is actually congressional language

1 that dates back many, many years about the government paying  
2 industry for warranties. We actually have to get special  
3 permission to pay industry for warranties on things we buy.

4 Senator King: Well, we will talk about that I guess.  
5 I am astounded.

6 Senator Wicker: The aircraft would have cost even more  
7 had we insisted on a warranty.

8 Admiral Grosklags: Yes, sir. There are very few  
9 exceptions. I will give you an example of an exception.  
10 H-60's we were able to buy with a warranty because that was  
11 a standard Sikorsky used at the time for their commercial  
12 practices, and they just rolled it over to the government.  
13 But in the vast majority of cases, that is not true.

14 Senator King: Well, perhaps we could have some  
15 discussion of this. I can argue it both ways, but the idea  
16 of buying something like this and having parts fail and  
17 having the manufacturer, the OEM, not responsible strikes me  
18 as an odd way to procure most anything.

19 Let me ask a different question.

20 Senator Wicker: Admiral, that goes back to what year?

21 Admiral Grosklags: It is a long time, sir. I would  
22 have to go back and look.

23 Senator Wicker: Even before Senator King. Well, if  
24 you would supply that to us because there is some interest  
25 in the room obviously there.

1 Admiral Grosklags: Yes, sir.

2 [The information follows:]

3 [SUBCOMMITTEE INSERT]

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1           Senator King: But I would be interested in the overall  
2 question of the sustainment costs and why they are so high  
3 because, as I say, Ellen Lord said they are unaffordable.  
4 That is a fine -- unaffordable means we ain't going to be  
5 able to do it, and we have got to figure that out.

6           Quickly, in the Air Force we have had a lot of work on  
7 the pilot shortage. Is there a pilot shortage in the Navy  
8 and the Marines as well? We are talking about acquiring  
9 aircraft here. Do we have the pilots to fly them? General  
10 Rudder?

11           General Rudder: We are a couple of percentages below  
12 where we should be. So we are not in as dire of a pilot  
13 shortage as what I think we were seeing on the Air Force  
14 front.

15           But it is no secret that the airlines are hiring, and  
16 we are working our pilots hard. So we are working on a few  
17 different fronts. I will give you some examples.

18           The Marine Corps and the Navy, along with our Air Force  
19 -- we started up pilot bonuses again. We had not done this  
20 since 2011, and we were probably at the low end of that. We  
21 were with a 2 years' bonus, \$20,000 per year for TACAIR,  
22 88-B, F-18, F-35, and V-22 too because we were worried about  
23 our tow brother because they are a high value item out in  
24 the market as well. So far we had a 68 percent take on  
25 that. So 33 out of our 35 F-35 pilots took the bonus, 123

1 out of 169 V-22's took the bonus.

2 So with that we are still watching it closely. And I  
3 tell you we watch it every day. In a normal 10-year  
4 program, pilot retention, attrition rates, probably around  
5 8.9 percent. We are probably at about 10.5 percent TACAIR-  
6 wide. So what it means is we are putting as many folks as  
7 we can in our squadrons and maybe some of the B billets for  
8 fighter pilots maybe are not filled in some cases and we  
9 keep people in the squadrons longer. But we are looking at  
10 throughput to make sure we keep up the pilot rate because  
11 for us and as the Navy, we both are in this thing together  
12 transitioning to the F-35. We have to be able to stand down  
13 F-18 squadrons to stand up the F-35 squadrons. So we got to  
14 make sure we are transitioning those people to those  
15 squadrons while we are still maintaining our legacy fleet as  
16 well.

17 Senator King: Admiral Conn, I am over my time, but how  
18 is the Navy doing on pilot retention?

19 Admiral Conn: For our department heads and post-  
20 command commanders, we are not meeting our goals. The  
21 bonuses may provide some opportunities to address some of  
22 those. My focus in my position is on readiness, to get the  
23 aircraft up and get those pilots flying, to make sure that  
24 lack of flight time is not a distracter.

25 Senator King: I would commend to both of you --

1 Senator Cotton and I on the Airland Subcommittee had an  
2 informal roundtable with a group of Air Force pilots to talk  
3 about this issue without a lot of officers and press or  
4 anybody. And it was very interesting because what we heard  
5 was that it was not necessarily about money. It was more  
6 about OPTEMPO, time with family, and interestingly, time to  
7 fly, that the pilots did not want to be at desks and on  
8 different tracks. The Air Force is doing some serious work  
9 on this. I would urge you to talk to them about it because  
10 they are sort of -- I was about to say they are at the front  
11 edge of this. That is not a good place to be, but they are  
12 working on it.

13 So thank you, Mr. Chair.

14 Senator Wicker: What do you think about that, Admiral  
15 Conn? Does that make sense to you? Those Air Force  
16 conclusions.

17 Admiral Conn: Yes, sir. We are in a competition for  
18 talent, and it is not just with the airlines. I had the  
19 privilege of working out of Fallon, Nevada, and I had a lot  
20 of enterprising junior officers, top gun JOs, Havoc, which  
21 is the Growler equipment, just marvelous people to have to  
22 command. But it is not just the airlines. They are going  
23 to med school. They are going to law school. They are  
24 trying to get their MBA. There are a lot of choices for  
25 them out there.

1           Senator Wicker: Well, Senator King says they are  
2 having to sit at a desk a lot, but the OPTEMPO is killing  
3 them too. What do you say to that?

4           Admiral Conn: The OPTEMPO for our aviators for a  
5 department head that is deployed on a carrier -- all he  
6 knows is combat operation during his entire career.

7           Senator Wicker: Senator Sullivan?

8           Senator Sullivan: Thank you, Mr. Chairman.

9           To Senator King's point, is the big issue not they are  
10 just not flying enough? I mean, they come to the Marine  
11 Corps and the Navy to fly. They get their wings. I think  
12 there was some anecdote that the Chinese pilots and the  
13 Russians are flying more hours monthly, way more, than our  
14 men and women. I mean, is that not it? Do they not want to  
15 fly? Is that not why they became naval aviators? And how  
16 do we fix that? We all want to fix that.

17          Admiral Conn: Senator, that is a valid point. These  
18 young aviators wear the wings proudly. They want to get in  
19 the air.

20          Senator Sullivan: I mean, is there a way we can help  
21 you with that, General?

22          General Rudder: You are, Senator Sullivan. And I will  
23 tell you about 3 years ago when I was out of 1st Marine Air  
24 Wing in Okinawa, we had F-18 squadrons come out to Iwakuni.  
25 There was a time where those squadrons had maybe six or

1 seven airplanes on the flight line maybe a couple months  
2 before they were getting ready to deploy, maybe not all  
3 their pilots. And that Marine air group cobbled together  
4 that squadron to get them out the door to forward deploy  
5 them at a 1 to 2 dwell rate. That means you were deployed  
6 for 6 months and home for a year.

7 Today, through a lot of the strike fighter management,  
8 we have been able to fill those squadrons up. So everybody  
9 is going out the door with 12 airplanes now. We have more  
10 trained crew. So we are seeing from 3 years ago when we  
11 first started getting into the 2017, we are seeing some  
12 spikes and positive movement in both readiness levels in  
13 those particular organizations through funding of the depot.  
14 The good news is last year we got 70 airplanes, 70 F-18's,  
15 out of the depot. The bad news is we still had to work on  
16 them to fix them in the squadron. So we are correcting that  
17 inside the depot, the depot ready initiative.

18 So as the Navy begins to divest out of this legacy  
19 Hornet for us, we are able to take advantage of the high lot  
20 number, lot 15 and above F-18's. And we are going to manage  
21 those within the squadrons so they have the best fighters  
22 they have available.

23 Senator Sullivan: So you say the trends on training,  
24 you know, stick time, is getting better?

25 General Rudder: For the F-18 community in particular.

1 Maybe 8 hours a month was the average per pilot. Now it is  
2 up to 13.5. Marine Corps-wide, it is up to 17 hours.

3 Senator Sullivan: Is that the same in the Navy,  
4 Admiral?

5 Admiral Conn: We are looking at about 14 to 16, but  
6 averages can be deceiving. The folks that are operating  
7 forward are getting over 30 hours a month. It is the folks  
8 that are on the bench that we need to get in the air.

9 Senator Sullivan: But we all agree that we need to  
10 keep that trend line going in the right direction.

11 Admiral Conn: Absolutely.

12 Senator Sullivan: Let me ask real quick a couple other  
13 questions.

14 General, on the Osprey, I noted last year there were  
15 three hard landings. One of those crashes killed three  
16 marines in Australia. I know that that aircraft has a  
17 pretty solid track record. It started out wobbly, as we all  
18 know. But should we be concerned about its overall  
19 reliability? Are you concerned about its overall  
20 reliability? And is there anything we can do on that?

21 General Rudder: No. I think the readiness funding  
22 that we are getting is going to allow us to initiate some  
23 readiness initiatives, for example. The aircraft itself is  
24 safe, and it has been safe for years. I think although a  
25 lot of those investigations are still being worked through,

1 in the past, the ones that I will talk about, for the most  
2 part the aircraft was operating as designed.

3 But back to your point, we have run these aircraft  
4 hard. They are, I will not say, the Marine Corps'  
5 centerpiece but they are DOD's centerpiece. They are on  
6 standby around the world as we speak, whether you are off  
7 the ship supporting special operators or supporting folks in  
8 both the CENTCOM, EUCOM, and AFRICOM AOR. So we have run  
9 them hard.

10 We have just put our two first aircraft -- it will be  
11 three total this year -- up into a common configuration,  
12 refit up in the Boeing plant up in Philadelphia, and we are  
13 going to refit most of our airplanes. We had 75 different  
14 configurations of that aircraft overall, the lot numbers.  
15 We are going to get that down to five. We are also going to  
16 redesign the cell because that is where most of our  
17 readiness issues are. Although the third multiyear will  
18 allow us to buy out, the Navy to buy in, the Japanese to buy  
19 in because they are going to get their first MV-22 this  
20 November, but now we are focusing a lot of our funds on  
21 readiness for that particular airplane.

22 Senator Sullivan: Thanks.

23 Let me ask one final question on training, a little  
24 parochial for me. I had the Commandant of the Marine Corps  
25 up in Alaska about a year and a half ago. We got a brief on

1 finishing up a Red Flag exercise at Eielson. When we got  
2 there early on Sunday morning, there was I think 10 or 11  
3 Marine Corps Hornets there. The squadron commander was with  
4 the aggressor squadron commander of the F-16 squadron out at  
5 Eielson. The Marine Corps squadron commander called it the  
6 best training he had ever done in his entire Marine Corps  
7 career. As you know, JPARK out there has airspace bigger  
8 than Florida.

9 And yet, the Red Flag and even Northern Edge is kind  
10 of, in some ways, dominated by the Army and Air Force. We  
11 would welcome the naval aviation component represented here  
12 to come out to Red Flag exercises at JPARK, to Northern Edge  
13 exercises. That is great training to get a carrier battle  
14 group out there. So I just want to put that in your ear.  
15 The Commandant heard that his squadron commanders view that  
16 as the best training they have ever done, and if you  
17 gentlemen can take a look, that would be good for the  
18 nation.

19 General Rudder: We have sent many a squadron up there.  
20 And they do. I would agree with you. It is great training.  
21 We also sent a radar up there, a TPS-59, to a place called  
22 Bear Mountain, which actually lives up to its name my  
23 marines found out.

24 Senator Sullivan: Thank you, Mr. Chairman.

25 Senator Wicker: Senator Sullivan, can you see all the



1 way to Russia from there?

2 Senator Sullivan: Those marine and naval aviators  
3 probably fly closer to Russia than anybody. As you know,  
4 our F-22's up there intercepted I think at least Bear bomber  
5 incursions into U.S. airspace last year. So we are quite  
6 familiar with the Russians in Alaska.

7 Senator Wicker: Thank you.

8 Senator Blumenthal?

9 Senator Blumenthal: Thanks, Mr. Chairman.

10 Welcome to all of you and thank you for your long and  
11 distinguished service.

12 Lieutenant General Rudder, I want to begin with your  
13 most important qualification. I seem to recall that you are  
14 a native of Canton, Connecticut.

15 General Rudder: That is right, Senator.

16 Senator Blumenthal: I hope you, if you still have  
17 family, give them my best there.

18 The CH-53K King Stallion has been funded in this fiscal  
19 year. I was pleased to see that the Marine Corps requested  
20 to accelerate funding to increase the production ramp rate  
21 in fiscal year 2019 by one helicopter. I do not need to  
22 tell you, but maybe you should say for the record why you  
23 think the King Stallion is so important to the Marine Corps  
24 as a heavy lift capability.

25 General Rudder: Yes. Thank you, Senator.

1           This aircraft is mechanically and technologically  
2 amazing. It fits directly into the National Defense  
3 Strategy as far as heavy lift for distributed operations in  
4 whatever theater you are talking about.

5           We have got about 800 hours on the airplane right now  
6 in the test sequence, and we are working through all  
7 reliability issues early on. We have front-loaded  
8 reliability and spares of this airplane. Quite honestly, it  
9 gets the marine and naval force off our amphibious ships or  
10 wherever you are in a manner which cannot be accomplished by  
11 any other aircraft in DOD. We have a KPP for 110 nautical  
12 miles lifting at 27,000 pounds. We have met that. As a  
13 matter of fact, we just lifted 36,000 pounds with this  
14 airplane the other day. That is the highest -- now, I do  
15 not want to argue with our Russian counterparts because they  
16 have got a helicopter that might have lifted more than that.  
17 But in the free world, that is the largest lift of any  
18 helicopter that we have done. So it is performing to that  
19 level that allows us, as we look at the things that we are  
20 buying like the JLTV -- and we just lifted one the other day  
21 that was 19,000 pounds. We are able to lift that with ease.  
22 We are able to dual lift HUMVEES, full-up armored HUMVEES.  
23 So that capability allows maneuver on the battlefield.

24           I think another thing I will say just for the logistic  
25 experts in here is we built that thing to be able to slide

1 in four 63-L pallets. Those are the standard DOD pallets.  
2 You can park a C-17, C-130 tail to tail with this thing and  
3 just roll pallets off right into the back of this  
4 helicopter, and you cannot do that with any other system.

5 So thanks for asking the question, Senator.

6 Senator Blumenthal: I hate to put you on the spot, but  
7 ideally how many more of the CH-53K's would you like to see  
8 funded in fiscal year 2019?

9 General Rudder: I think there is capacity. You know,  
10 as we always look at this thing, sometimes we are thinking  
11 about what is going to happen in 2018 and how that brings  
12 forward and whether we are going to overrun our interested  
13 partners. But I think there is capacity for two more.

14 Senator Blumenthal: And I read about that test that  
15 you recently cited that involved lifting 36,000 pounds  
16 hovering for, I think, a 100 feet for about 10 minutes. And  
17 one of the comments made afterwards was that it was  
18 extraordinarily stable, indicating its safety. Is that  
19 consistent with your view?

20 General Rudder: It is. It is a composite. It is fly-  
21 by wire. It is one of those helicopters you can fly hands  
22 off. And it is really going to help us in another area that  
23 we have challenges with over the years, and that is a  
24 degraded visual environment and conditions in the desert.  
25 So that stability of that helicopter will help us greatly in

1 that environment.

2 Senator Blumenthal: I want to ask a more general  
3 question of all the witnesses talking about unmanned  
4 helicopters. What do you see as the future for this  
5 program? As you know, in Connecticut, Command is one of the  
6 companies doing research and development in this area.  
7 Could you give me your assessment of how you think that  
8 program is going?

9 Admiral Grosklags: Senator, I think that there is  
10 going to be an increased demand for unmanned vehicles of all  
11 types, not just for aircraft, but rotorcraft will be in that  
12 family. You are well aware we already have MQ-8's  
13 throughout the Navy, and we are spreading them through LCS.  
14 As we get into the future vertical lift discussion with our  
15 contemporaries in the Air Force and the Army, as well as the  
16 Marine Corps, I think we will see some of those future  
17 vertical lift platforms will also be unmanned or perhaps  
18 alternately manned depending on the mission that they need  
19 to execute.

20 Senator Blumenthal: The reason we are not moving more  
21 quickly on that program.

22 Admiral Grosklags: On future vertical lift?

23 Senator Blumenthal: Yes.

24 Admiral Grosklags: I think it is really a question of  
25 setting the requirements. As you know, we are still in the

1 process across Navy and Marine Corps acquisition of  
2 recapitalizing. We are still buying new V-22's and new  
3 H-1's, and we just finished production of H-60's, as you are  
4 well aware. So I think we need to now nail down the  
5 requirements for the next set of aircraft that we want to go  
6 after now that we have recapitalized our current inventory.

7 General Rudder: I think there were two parts to that,  
8 but just to build upon the Command and KMACS, we bought two  
9 of those. The operational test squadron that I own, VMX-1  
10 in Yuma, Arizona -- we own some. So once the 2018 budget  
11 gets signed, we are going to pull those out and begin doing  
12 more unmanned logistics resupply experimentation. We  
13 already had those two in Afghanistan for a time. So we are  
14 going to pull those back out again with 2018 funds and build  
15 upon 2019 funds to fly those some more.

16 Admiral Conn: Sir, I think the funding levels in 2019,  
17 if they continue and it provides an opportunity to look at  
18 the right time to go to either an MHXX or a future vertical  
19 lift with respect to the Navy's rotor wing. And part of  
20 that may be unmanned teaming that is mapped to the 355-ship  
21 Navy that we are trying to build to.

22 Senator Blumenthal: Thanks.

23 Senator Wicker: Senator Tillis?

24 Senator Tillis: Thank you, Mr. Chairman.

25 Gentlemen, thank you for your service.

1           General Rudder, I will start with you. I want to get  
2 an update on the 94 airframes that are scheduled for Cherry  
3 Point, the 35B in, I believe, October followed by 22. Are  
4 they still on track?

5           General Rudder: I think we have got to work through  
6 some depot modifications, but right now it has got to stay  
7 on track for that. So FRC East is going to be a key point  
8 for the F-35B or F-35 in general for rework and depot level  
9 maintenance.

10          Senator Tillis: Well, actually I wanted to get a quick  
11 update. We made progress in the prior NDAA's on the lift-fan  
12 facility, the security fence, all the prerequisites for  
13 standing up the lift-fan capability, which I guess today is  
14 gated by the Rolls Royce plant in Indiana, if I am not  
15 mistaken. So are we still tracking to have that capability  
16 down there along with building out our depot capabilities?

17          General Rudder: We do. So lift-fan -- MILCON was in  
18 the fiscal year 2018 budget, so we are waiting for that  
19 budget. That is one of those restrictions. But it is. I  
20 mean, that is in the budget. We funded it. We are going to  
21 build it.

22          Typically once you get the plan and design done, which  
23 I believe is pretty close -- typically with any MILCON  
24 project, it is a 2-year build. Then you have got to get  
25 your tooling in there, which is 12 months and then

1 qualification of your depot level artisans or your  
2 maintainers to be able to do that. But for lift-fan  
3 maintenance, 2021 is when we start to incur kind of a demand  
4 signal for lift-fan rework that will have to go back --

5 Senator Tillis: Back?

6 General Rudder: Just because we will not have the FRC  
7 East production. But that is not to say that we are not  
8 pressing forward to having that capability. This is back  
9 to, broadly speaking, F-35 and taking organic intermediate  
10 depot maintenance and getting it closer to the flight line.  
11 We must do that and we will do that.

12 Senator Tillis: That also speaks to the question I  
13 think Senator King asked about the expense of operating  
14 these machines over time. Until we have that organic  
15 capability, you are going to pay a part of a premium. And I  
16 think that FRC East is going to be an important part of  
17 achieving that downward curve on maintenance over time. Do  
18 you agree with that?

19 Admiral Grosklags: Yes, sir, it absolutely will be.  
20 What we are doing working with the Joint Program Office  
21 right now, both ourselves and the Air Force are trying to  
22 accelerate the standup of the depot capability. Typically  
23 we would work that through the OEM, in this case Lockheed  
24 Martin, but we are actually trying a new way of doing it  
25 where we are going back to the actual vendor of the part,

1 the component. In this case, you are talking about Rolls  
2 Royce. In other cases it may be whoever makes the wing or  
3 the EOTS or whatever component that happens to be on the  
4 aircraft to accelerate that standup capability.

5 Senator Tillis: The reason I asked the question about  
6 the 94 airframes is we had heard some of the deliveries to  
7 some of our partners shifting to the right. I wonder if you  
8 could infer from that some of our own domestic deliveries  
9 were delayed for supply chain or other reasons.

10 Admiral Grosklags: I do not know that we have had any  
11 aircraft delivery delays of that magnitude. The last three  
12 lots of aircraft across the board --

13 Senator Tillis: So you do not see a general trend of  
14 deliveries shifting to the right.

15 General Rudder: I think that if you look at the past  
16 couple years, we did not buy at the rate that we wanted to.  
17 Again, back to the budget scenario that is presented to us  
18 today, we are ramping back up again --

19 Senator Tillis: Got it because you have the certainty.

20 General Rudder: Our international partners -- we  
21 believe there is all in. There are probably going to be a  
22 few more that jump in. There are a lot of countries  
23 involved for buying this --

24 Senator Tillis: Well, anything we can do with the help  
25 and support of the efforts for FRC East, count me in. We



1 even had the legislature weigh in. They appropriated money  
2 at the State level to kind of lay the groundwork for some of  
3 the outfit I think outside of the complex. And we will  
4 continue to work with you.

5 My last question in the time remaining really relates  
6 to tactical aircraft. One of the last times that I was down  
7 at Cherry Point, we had a lot of aircraft on the flight  
8 line, and they were due for certain maintenance that I had  
9 described to me the challenge had less to do with the  
10 ability to repair the aircraft and more to do of having  
11 funding in the underlying accounts that were necessary for  
12 them to actually complete the repairs. Does any of this  
13 make sense to you all? Because we were trying to figure out  
14 if we have had the funding depleted over time, with the new  
15 spending are we replenishing those accounts and is that in  
16 any way going to improve getting the shortfall based on the  
17 requirement. I think we currently have a shortfall in the  
18 requirement for tactical aircraft. Is that right? For the  
19 Hornet in particular.

20 Admiral Grosklags: So we would have to get specifics.  
21 The funding request in PB-19 basically gets the depots to  
22 the point where they can execute all the aircraft,  
23 specifically production requirements, with the exception of  
24 a handful of aircraft, and those are spread across a number  
25 of different type model series.

1           For F-18 A through D specifically, today we have the  
2           requisite number of in-reporting aircraft. So the Navy and  
3           Marine Corps has a requirement for X number of airplanes on  
4           the flight line available to them. They have those, in  
5           other words, out-of-reporting versus in-reporting. The  
6           number of in-reporting aircraft are what is required to  
7           support the fleet. We still have issues with those in-  
8           reporting aircraft in getting them mission capable, whether  
9           it be repairs, spares, whatever it happens to be.

10           The same is largely true on the E/F side of the house.  
11           There is not a backlog of E's and F's Super Hornets in the  
12           depots either at this point in time. We had that challenge  
13           2 years ago, but we are past that point. And actually the  
14           requirement for F-18 A through D's drops dramatically over  
15           the next couple of years.

16           Senator Tillis: Thank you.

17           Senator Wicker: Thank you, Senator Tillis.

18           Senator Kaine?

19           Senator Kaine: Thank you, Mr. Chair, and thanks to the  
20           witnesses.

21           Just a foundational question I have been sort of  
22           thinking about a little bit. All of our service branches,  
23           Marine, Navy, Army, Air Force, have aerial platforms, and we  
24           are in this development of a lot of unmanned aerial assets.  
25           As you see the development going forward, do you see kind of

1 philosophical differences between the four service branches  
2 and the mixture of manned versus unmanned? Is the Air Force  
3 more wedded to human pilots and other branches less so? Or  
4 do you think the sort of mixture of manned and unmanned is  
5 something that is really more at the OSD level and there  
6 will be some consistency among the service branches?

7       General Rudder: I think you are seeing the unmanned  
8 technology grow at a rate that is creating such  
9 opportunities that you are seeing, whether it is rotary wing  
10 unmanned like the MQ-8, obviously the Reapers, MQ-4 -- you  
11 are seeing this wave of unmanned technology kind of present  
12 the services with a lot of opportunities. And they are  
13 growing so fast that we are trying to keep up with it.

14       As a matter of fact, we talked about this logistics  
15 capability for unmanned systems. That is something that we  
16 are pursuing. My counterpart in I&L is pursuing unmanned  
17 logistics resupply. We did it in Afghanistan. We are going  
18 to do it in the future.

19       Very shortly, we will be pursuing with industry what  
20 you see in our budget this year with the MUCS, the MAGTF  
21 unmanned systems. You are going to see us put out a group 5  
22 requirement to industry to be able to fly off the amphibious  
23 ships. Right now, what we have is RQ-21, which is a group  
24 3, smaller item that we use on a regular basis on every  
25 deployment now. So you are seeing that.

1           And what is really exciting about the unmanned is -- a  
2 lot of it is physics. If you have a runway, it is good. If  
3 you have it come off expeditionary, you got to have some  
4 sort of vertical lift. But the exciting part of this is,  
5 one, they are presenting ourselves with a way to network  
6 ourselves better, persistent networks. They are also  
7 presenting with the optics, the EO optics, the synthetic  
8 aperture radars a way to have this sensor out there in many  
9 different waveforms.

10           So in that sense, there are so many ideas out there  
11 that I think we are connected. Network-wise we are  
12 beginning to connect each other. But how you get to that  
13 and the ability to get up in the air is still technology,  
14 and every time we turn around, an industry partner comes up  
15 with a new idea. It is very exciting.

16           Senator Kaine: Can I ask, Admiral Grosklags, as you  
17 are seeing the different service branches tackle it -- and  
18 all the branches use aviation assets in slightly different  
19 ways -- do you think there will be different philosophies  
20 about manned and unmanned?

21           Admiral Grosklags: The biggest philosophy difference I  
22 have seen today between us and the Department of the Navy  
23 and the Air Force is in how we operate them. I think as you  
24 are aware, the Air Force basically has a pilot in the loop  
25 for most of their unmanned systems. We have a pilot but we

1 are not flying it. We are pushing buttons. So it is more  
2 of a touch screen. We are not even sure in the future we  
3 need aviators to do that. We need somebody with the right  
4 training to do that. It does not necessarily need to be  
5 somebody wearing pilot wings. That is a different  
6 philosophy from the Air Force right now.

7 But in terms of what we use the aircraft for, I am not  
8 sure there is a huge gap. If you look at the ISR assets  
9 that both services are fielding today, there is a lot of  
10 commonality between them not only in the airframe types, if  
11 you will, but also in the sensors that we are using.

12 Senator Kaine: Let me ask this. It is kind of an  
13 extension on the question. The more we rely -- sometimes we  
14 can go for complexity and stumble over simplicity. The more  
15 we rely on unmanned and the more we rely on data link  
16 dependent weapon systems -- there are fight environments  
17 that require restricted electronic emissions for safety or  
18 to be covert. How do we grapple with that security  
19 challenge with all these interlinked systems?

20 Admiral Grosklags: I will make two comments and then  
21 ask my colleagues here.

22 One is that we are very intent on dealing with  
23 cybersecurity issues for our data links particularly for  
24 unmanned aircraft for the reasons you just stated.

25 We also have a number of efforts underway for what I

1 will generically call low probability of intercept data  
2 links, more secure data links that will help us prevent  
3 intrusion by, say, unwanted actors. I probably cannot go  
4 into a whole lot more detail in here. But those are things  
5 we are working across services.

6 Senator Kaine: Admiral Conn, would you want to add in  
7 to that? And I think my time is about up. But, yes,  
8 please.

9 Admiral Conn: I think the comment about low  
10 probability of intercept, low probability of detection is an  
11 important point to make. It is not only for the cyber  
12 protection but it is also not necessarily revealing your  
13 location. Even with the expanse of the Pacific on a  
14 maneuvering ship, there are some things you need to consider  
15 in terms of how you are going to operate.

16 Senator Kaine: Thank you, Mr. Chair.

17 Senator Wicker: Thank you, Senator Kaine.

18 Senator Cotton?

19 Senator Cotton: Thank you, and thank you, gentlemen.

20 Admiral Conn, I would like to talk about antisubmarine  
21 warfare. Very stealthy diesel submarines continue to  
22 proliferate around the world. It is increasingly a platform  
23 of choice of a lot of friendly nations but some not so  
24 friendly as well. And then obviously China and Russia have  
25 very high-end capabilities. While our airborne platforms

1 seem to be where we want them to be, the sonobuoy technology  
2 and the Mark T-4 torpedo are pretty old school. Can you  
3 talk to us about those systems and the state of  
4 antisubmarine warfare if we were to be in a fight especially  
5 against high-end adversaries like Russia and China?

6 Admiral Conn: I think with the P-8, the existing P-3,  
7 our MH-60 Romeos and the capabilities they bring to bear in  
8 terms of finding, fixing, tracking, targeting, and engaging  
9 submarines, they have significant value in that mission set.  
10 As with all weapons, this is against a pacing threat. So we  
11 will continue to look at what we need to modernize based on  
12 that pacing threat and make the investments that we need to  
13 make to ensure that we have the lethality we need in that  
14 specific mission set.

15 Senator Cotton: Do you think we need to modernize the  
16 buoy and the torpedo technology?

17 Admiral Conn: I think for now we are good, but  
18 sometimes there are threats out there that move faster than  
19 we do. We just need to keep tune with the intelligence  
20 community and make the decisions at the right time.

21 Senator Cotton: Admiral, you look like you would like  
22 to add something on that point.

23 Admiral Grosklags: Yes, if I might. If you are  
24 familiar with multi-static active coherent, it is a  
25 capability that we introduced to the P-8 a couple years ago.

1 That is an initial capability for certain water conditions.

2 That is a new family of sonobuoys.

3 There is a follow-on effort that we have been trying to  
4 get started for the P-8 as part of their increment three,  
5 which is enhanced multi-static active coherent. That is  
6 particularly useful against diesel submarines and submarines  
7 difficult to detect, very quiet nuclear-powered submarines  
8 in deep water. So we need the support of this subcommittee  
9 and others in order to keep that funding in the budget  
10 because it is one of the areas for P-8 that is continually  
11 being marked as our budget comes forward.

12 Senator Cotton: And by support of this subcommittee,  
13 you mean money.

14 Admiral Grosklags: Yes, sir.

15 Senator Cotton: Is there anything else you mean?

16 Admiral Grosklags: No, sir. That is it specifically.  
17 It is P-8 increment three and the two ECPs associated with  
18 it.

19 Senator Cotton: We can usually manage money. I think  
20 we can do that. Thank you.

21 General Rudder, when the last Prowler squadron sunsets  
22 in 2019, the Marine Corps, as I understand, will have no  
23 more dedicated airborne electronic attack aircraft. Is that  
24 correct?

25 General Rudder: That is correct.



1           Senator Cotton: So what is the Corps going to do  
2 through MAGTF EW system of systems to replace electronic  
3 surveillance, electronic attack capabilities that we  
4 currently have through the Prowler?

5           General Rudder: The E/A-6B for many years, like all  
6 the electronic airborne platforms that we have, really has  
7 been a joint asset. The last deployment that it does in  
8 fiscal year 2018 will fulfill that mission. We have one  
9 squadron left with six airplanes.

10           So as far as looking at airborne high-end mission set  
11 for DOD, we have 160 Growlers currently. That is what the  
12 program is. So when the E/A-6B goes away, much like we are  
13 doing at the weapons and tactics course that we are going to  
14 put on here in a few months, the Growlers are going to come  
15 down, and we are going to work with those particular  
16 airplanes.

17           Aside from DOD airborne electronic warfare, electronic  
18 support, we are buying jamming pods called Intrepid Tiger 2  
19 that we are going to put on our AV-8B's, our F-18's, and  
20 actually are on our Hueys. And they are actually deploying  
21 on the MEUs jammer system.

22           For a larger extent, the F-35B and C for that matter  
23 will provide not all the bands that it needs to provide as  
24 far as what the Growler can do and what the joint force can  
25 do, but that will be a very capable platform and that will

1 fill a fairly significant gap really throughout DOD and  
2 certainly for the Marine Corps.

3 So for that aspect of electronic attack, I think we are  
4 going to be okay with the F-35B with our Growler  
5 counterparts.

6 Senator Cotton: Thank you, gentlemen.

7 Senator Wicker: Admiral Grosklags, the F-35 is an  
8 amazing aircraft. Looking back knowing what you know, was  
9 it a good idea? How much longer you got in the service?

10 [Laughter.]

11 Admiral Grosklags: I do not know. It may depend on my  
12 answer.

13 Yes, sir. I mean, we absolutely need that capability.

14 Senator Wicker: Why do you not take a deep breath?

15 Admiral Grosklags: We needed that capability 10 years  
16 ago, quite honestly. We still need it today but we needed  
17 it 10 years ago. And that is where my deep breath comes in.  
18 It is, I think, disappointing to all of us that it has taken  
19 us so long to get that aircraft into the hands of the fleet,  
20 notwithstanding the fact the Marines have had it out in  
21 their first deployment on a ship starting yesterday. But it  
22 has taken too long to get into the hands of our warfighters.  
23 That is the biggest issue I have with that program.

24 Senator Wicker: When did we know that it was going to  
25 take so long? When should we have known?

1           Admiral Grosklags:  Sir, I think it is like many of our  
2 programs where as they evolved over time, you incur a year  
3 delay, you incur another year delay, and it adds up over the  
4 years.  In a case like this, it has been -- and I do not  
5 even know anymore what the original initial operational  
6 capability was intended to be.  But it has grown over time.  
7 The delays have just added on top of each other.

8           Now, I will say, if I could, that since they re-  
9 baselined the program back in the 2012 time frame, they have  
10 largely maintained that schedule for the last 5 or 6 years.  
11 That was, I will say, a watershed event.  And since then,  
12 they have --

13           Senator Wicker:  Explain that to us.

14           Admiral Grosklags:  I believe it was 2012 time frame  
15 when they re-baselined the program.  They reestablished all  
16 the intent for the IOC for all three services.  The totality  
17 of the program is probably within 6 to 12 months of that  
18 reestablished baseline from 2012.  I believe it was 2012.

19           Senator Wicker:  Admiral Conn, the NDAA for fiscal year  
20 2017 gave the Navy temporary reprieve from the requirement  
21 to maintain and fully staff 10 carrier air wings until  
22 additional deployment aircraft carriers can fully support a  
23 10th carrier air wing or October 1st, 2025, whichever comes  
24 first.

25           How does this budget request begin to lay the

1     groundwork to fully equip and man the 10th carrier air wing?  
2     And are the procurement profiles outlined in the FYDP for  
3     Super Hornets, Joint Strike Fighters, Hawkeyes, Growlers,  
4     Seahawks, and CMV-22's built with the requirement for 10 air  
5     wings or only nine?

6             Admiral Conn:  Sir, first and foremost, we will comply  
7     with the law.  The 10 carrier air wing piece or having 10  
8     carriers to be able to host 10 carrier air wings is not  
9     going to be really available anytime soon.  So we are  
10    looking at the 1 October 2025.  So we are going to march  
11    down that path.

12            There will be opportunities with the 110 Super Hornets  
13    that are in the budget, 97 JSF that are in the budget.  But  
14    those lines are still hot based on future investments that  
15    will probably need to be made, including manpower, but that  
16    is a little early to need right now with respect to that  
17    2025 timeline, sir.

18            Senator Wicker:  Thank you.

19            Senator Hirono?

20            Senator Hirono:  Thank you.

21            Vice Admiral Winter, the head of the F-35 Joint Program  
22    Office, has laid out a strategy to modernize the F-35 by  
23    transitioning the F-35 software to an open systems  
24    architecture with new capabilities being released every 6  
25    months or so.

1           What is the Navy's plan for having the F-35 logistics  
2 software autonomic logistics information system, or ALIS,  
3 interface with other logistic systems within the Department  
4 of the Navy? So whichever one of you gentlemen can best  
5 answer this question.

6           Admiral Grosklags: So, Senator, I am not sure. Were  
7 there two questions there? Because the C2D2 plan that you  
8 described, the 6-month software release, is both for ALIS,  
9 as well as for the core aircraft software.

10          Senator Hirono: Let us focus on the ALIS.

11          Admiral Grosklags: It is certainly our desire and our  
12 plan at some point to be able to interface ALIS with the  
13 rest of our naval aviation sustainment systems, DECKPLATE,  
14 AMSRR, those types of things that we use for all of our  
15 other aircraft.

16          One of our challenges right now, quite honestly, is us,  
17 the government, gaining insight into the software and the  
18 coding within ALIS. Right now, much of that is held as  
19 proprietary, and we have very limited rights and access to  
20 the data coming out of ALIS. That is one of the challenges  
21 that Admiral Winter is tackling in his new role as head of  
22 the JPO.

23          Senator Hirono: So what kind of time frame are you  
24 thinking of in order to be able to interface these systems?

25          Admiral Grosklags: I would have to get back with you

1 with an answer on that.

2 Let me refer back to what I thought you were going to  
3 go with the question originally, which was for the core  
4 software on the aircraft. A similar scenario where we, the  
5 Air Force and the Navy, are ready to stand up our software  
6 sustainment activities, which could include ALIS software,  
7 as well as the operational software program in the airplane.  
8 We have been ready to do that for a couple of years. To  
9 date, we have not been given the access to the software  
10 required for our folks to get the required insight and  
11 understanding of how the software is developed and the code  
12 itself so that we can take on part of that responsibility  
13 from industry.

14 Senator Hirono: Can someone? Do you have to get this  
15 access --

16 Admiral Grosklags: It is a contractual issue, Senator.

17 Senator Hirono: Contractual issue.

18 Admiral Grosklags: Yes, ma'am.

19 Senator Hirono: So are you working on that part?

20 Admiral Grosklags: That is something that Admiral  
21 Winter is working on in the JPO. And quite honestly, the  
22 plan for follow-on development in this 6-month period just  
23 so you have software releases will not be possible without  
24 the government getting additional insight from Lockheed  
25 Martin into the software development. It is not just about

1 the sustainment. It is about our ability to quickly turn  
2 it, test it, and deploy it to the fleet. If we do not have  
3 that insight, it will not work.

4 Senator Hirono: Well, keep working on it. We will  
5 check in with Admiral Winter.

6 Admiral Grosklags, one of the fundamental questions  
7 that we face on a program like the F-35 is when we think we  
8 have fixed a problem and we are surprised to hear new,  
9 unpleasant information. And of course, would be completely  
10 risk-free, otherwise it would not be development. It would  
11 be production.

12 I am especially concerned about the delays in regard to  
13 the software development. This is sort of in line with the  
14 other question too. So the Marine Corps has declared  
15 initial operating capability, or IOC, for F-35 2 years ago  
16 with a version of the software called block 2B. And the Air  
17 Force declared IOC last year with a version of the software  
18 called block 3I with basically the same capability as the  
19 block 2F software.

20 It is hard to keep track of all of these I have to say.

21 [Laughter.]

22 Senator Hirono: To achieve full operational capability  
23 for the Marine Corps and the initial operating capability  
24 for the Navy, the F-35 program will have to deliver a newer  
25 version of the software called block 3F. The Navy had been

1 planning to declare IOC of the F-35C in 2018, and now it  
2 appears that the completion of operational testing could  
3 extend well into 2019.

4 So, Admiral, will the Navy's IOC declaration be event-  
5 based, or is this declaration being driven by the calendar?

6 Admiral Conn: For the IOC declaration, it has been  
7 pretty consistent from the Navy that we are event- and  
8 capability-based not calendar-driven. And we are holding  
9 firm on that. So although IOT&E has slid to the right, we  
10 expect the IOT&E to begin in September, to be complete  
11 sometime --

12 Senator Hirono: September of this year?

13 Admiral Conn: Correct, and to be complete early 2019.  
14 And when we get the results or get informed that the  
15 aircraft has met all the requirements set forth in the  
16 original requirements document in terms of how the aircraft  
17 tasks perform with the sensors and weapon systems that are  
18 on it, then we will declare IOC, which is plenty of time  
19 before fiscal year 2021 first deployment.

20 Senator Hirono: Thank you. And you do not expect any  
21 further delays. You will meet the fiscal year 2021 --

22 Admiral Conn: That is correct, Senator.

23 Senator Hirono: Thank you.

24 Thank you, Mr. Chairman.

25 Senator Wicker: Thank you, Senator Hirono.



1           Senator Kaine?

2           Senator Kaine: Just briefly. I want to follow up,  
3 Admiral Grosklags, on your long pause when you answered the  
4 question about the F-35 worth it and your answer that we  
5 needed it a long time ago. It is demonstrating great  
6 capacity now.

7           Just in terms of kind of lessons learned for us, I paid  
8 a lot more attention to the carrier programs than the F-35.  
9 I am from Virginia. You know, we build carriers. It seems  
10 like the delays there, as you look backward at them -- one  
11 of the main reasons for the delay was, you know, it was not  
12 just a completely redesigned ship and a lot of the systems  
13 on the ship, arresting gear and the propulsion and  
14 communication systems, were also being all redone sort of at  
15 the same time. When you are building in class, you are  
16 trying to do it all at once. So we kind of learned some  
17 lessons from that.

18           I am a little curious with the F-35. You were building  
19 an advance platform for the different service branches to  
20 spread costs and to improve interoperability, including a  
21 lot of allied nations and trying to get them to commit in  
22 advance to purchase this.

23           As you look at the overall delay in the F-35, if you  
24 want to simplify it, was it more on the technical changes  
25 along the way or was it more trying to design a platform for

1 all the different branches and also other nations? How  
2 would you characterize kind of the lesson learned from the  
3 delay that we might try to improve on going forward?

4 Admiral Grosklags: This is probably a personal  
5 opinion, but it was both. There were certainly  
6 technological hurdles with that aircraft largely driven by  
7 software. That has been the, I will say, Achilles' heel for  
8 the most part on a timeline.

9 But there are also tremendous challenges brought to  
10 bare by the joint nature of the program and the influence of  
11 the partner nations, which is a good thing. It is a great  
12 partnership, but it creates a decision-making morass in some  
13 cases where it is very hard to get decisions made in a  
14 timely manner to move forward with the things that need to  
15 be changed or need to happen.

16 Senator Kaine: Right. So you gained in  
17 interoperability. You probably gained in some cost sharing  
18 by dealing with other nations. But it makes the decision  
19 process, which sometimes we are not good at anyway, much  
20 more cumbersome.

21 Admiral Grosklags: Yes, sir. I will be honest. That  
22 is not just an issue with our international partners. Quite  
23 often that is just an issue internal to the United States  
24 Government between our services when we have different  
25 priorities and different requirements, and getting through

1 the process of coming to a consensus that, okay, we are  
2 going to move forward collectively along this line is a very  
3 time-consuming process and made more so, as you noted, by  
4 bringing the partners into the discussion and making sure  
5 that we are also addressing their equities.

6 Senator Kaine: It gives me a lot of thoughts about the  
7 ways we could look at programs like this in the future. But  
8 I really appreciate that answer.

9 Thanks, Mr. Chair.

10 Senator Wicker: General Rudder, let us talk about  
11 light attack. The Air Force appears to be on the cusp of  
12 procuring a fleet of light attack aircraft to conduct  
13 operations against violent extremist organizations in a more  
14 fiscally sustainable way to free up their fighter aircraft  
15 to focus on training for the high-end fight.

16 Has the Marine Corps considered pursuing a light attack  
17 aircraft of its own? And why or why not?

18 General Rudder: Thank you, Senator.

19 We have been watching, tracking, and participating with  
20 the Air Force on this same program. So as a matter of  
21 fact --

22 Senator Wicker: Participating?

23 General Rudder: We have a pilot ready to go in case  
24 they were to deploy that airplane, and he is actually  
25 anxious to go. But that is another story.

1           We are looking at this right along with the Air Force.  
2   And I think if you look at what that particular turbo prop  
3   platform is doing around the world as far as foreign  
4   military sales, it is doing well in some of those  
5   environments. So I think in that aspect, it is very good.  
6   We are going to evaluate. We are going to continue to look  
7   at it. What we have for our light attack is our H-1 Zulu  
8   that can carry 16 Hellfire. We are kind of happy with the  
9   physics and the dynamics of what that airplane can do.

10           But back to your point, we are going to continue to  
11   track this particular program. The one thing that we have  
12   to always consider when it connects to the National Defense  
13   Strategy is can I self-deploy this airplane and will it go  
14   on a ship. And some of those things and as far as that  
15   environment, all the airplanes -- and we went through with  
16   the OB-10 years ago with survivability and ability to go on  
17   ships and how it operates with the marine air-ground task  
18   force. We have to take that in kind of a holistic account.  
19   So that is some of the things we look at when we talk about  
20   that particular airplane.

21           Senator Wicker: Could the Air Force light attack go on  
22   a ship?

23           General Rudder: They have prototype aircraft today  
24   that they are actually flying and testing, and we are  
25   tracking to see what they do on that. We are actually

1 tracking some variants that they have actually put into the  
2 field with some of our partner countries.

3 Senator Wicker: Would it not save money for the Marine  
4 Corps?

5 General Rudder: It depends what variant you are  
6 talking about.

7 Senator Wicker: Well, because if it would not save  
8 money, there is no point in discussing it. Is there?

9 General Rudder: I think in the mission sets, if I were  
10 to review what we do in the world today -- for example, we  
11 have an F-18 squadron in CENTCOM theater right now. So when  
12 it takes off, it has a defensive counter-air mission, a  
13 counter-UAS mission, and it is going to drop some fairly  
14 significant weapons in support of ground forces on the  
15 ground. And it has got to get there fairly quick out of an  
16 airfield that is not necessarily close to the battlefield.

17 In Asia, in that type of fight, I am not sure it is  
18 survivable. If you are talking about Africa special  
19 operations and some of the countries that is in right now, I  
20 think you have a cost effective means to do that. For our  
21 TACAIR right now and where we are, we are not necessarily in  
22 an environment where that particular, as it stands today,  
23 fits in there. Yet, for our partner nations that are using  
24 it, it is doing quite well.

25 Senator Wicker: Well, further comparing what you all

1 are doing to the Air Force, Admiral Conn, the Air Force has  
2 opted to cancel its JSTARS recapitalization plan, arguing  
3 that the proposed replacement was not able to survive a  
4 high-end fight. The Navy, on the other hand, has invested  
5 heavily in the E-2D advanced Hawkeye and P-8 Poseidon, which  
6 both have similar vulnerability concerns as the proposed  
7 JSTARS recap program.

8 So what about this? What is the Navy's approach and  
9 why have you seemingly come to a different conclusion from  
10 the Air Force?

11 Admiral Conn: Sir, I cannot answer on behalf of the  
12 Air Force.

13 I will say for the E-2D and the airborne early warning  
14 mission that it does as an elevated sensor up and away from  
15 the carrier, there is nothing I am aware of right now that  
16 can replace that capability with a persistent capability  
17 providing airborne command and control, as well as some of  
18 the higher fidelity aspects of the E-2D and how it  
19 contributes to kill chains. I am not aware of anything else  
20 that can provide it.

21 Senator Wicker: Okay, but does this have any affect on  
22 the Navy and Air Force jointly executing airborne battle  
23 management in a high-end fight?

24 Admiral Conn: No, sir, I do not believe it does.

25 Senator Wicker: Thank you.

1 Two more questions.

2 Admiral Conn, give us an update on efforts to replace  
3 the Navy's TH-57 training helicopters.

4 Admiral Conn: To replace the 115 TH-57 helicopters, we  
5 are taking a new approach. We are going for commercial off-  
6 the-shelf aircraft that is going to be competed, and we are  
7 going to, then after the competition, buy those aircraft.  
8 And we are still working through the actual maintenance  
9 plan, certification plan. But that is the approach that we  
10 are taking. We are not building a new military aircraft.  
11 We are going to take a commercial aircraft and put it into  
12 that mission of training the next generation of rotary wing  
13 pilots.

14 Senator Wicker: What is your schedule on that, sir?

15 Admiral Conn: You will see that next year, sir.

16 Senator Wicker: And then finally, Admiral Conn and  
17 General Rudder, as the Department focuses increasingly on  
18 the high-end fight, how important are adequate training  
19 ranges and supporting equipment in ensuring our aviation  
20 forces are adequately prepared? Are there areas where our  
21 training infrastructure needs to be improved in terms of  
22 airspace, equipment, and other elements?

23 And please describe efforts by the Navy and Marine  
24 Corps to increase and improve the use of live, virtual and  
25 constructive LVC training and how these efforts are

1 interoperable within and among all the services.

2 Who wants to go first? Admiral Conn?

3 Admiral Conn: In terms of investments in the training  
4 environment of the future, there are four key attributes to  
5 any successful training program. The first one is you have  
6 to have an environment itself that is reliable, realistic,  
7 relevant, and recordable. And that could be a live  
8 environment or it can be a virtual constructive environment  
9 in which to train it.

10 Then you need a syllabus that has defined standards of  
11 performance that you measure against.

12 Then you need an instructor to teach that syllabus to  
13 those standards in that environment.

14 And then you need truth data to be able to record the  
15 event just like NFL plays or NFL game tapes where they look  
16 not only at the offense and defense but down to specific  
17 players on the field. That is the capability that we are  
18 developing.

19 In terms of the live side, we do need to upgrade our  
20 ranges, specifically the Fallon range training complex,  
21 getting it out of the Cold War era and into the 21st  
22 century, and those investments are starting to be made.

23 In terms of building a virtual constructive environment  
24 where we do our high-end training, that is being done at  
25 Fallon as well in an integrated training facility. And we



1 are doing that for a number of reasons. One, our live  
2 ranges themselves. We are running out of real estate  
3 measured in terms of the physical size and space of those  
4 ranges and our ability to access and control spectrum the  
5 way we are going to do it in combat.

6 The other part of that is from OPSEC. There are things  
7 we want to do and things we must train to, but we do not  
8 want to do it in the open air. That is why we are making  
9 those investments in integrated simulator facilities with  
10 F-18's, with F-35's, with E-2D, with Aegis, with MQ-25 to be  
11 able to train to the high-end fight at an integrated level.

12 Senator Wicker: General, what do you say?

13 General Rudder: To build upon that, just for airspace  
14 in general, we have to protect it as much as we can. We  
15 have encroachment issues around the world quite honestly and  
16 certainly in the United States. So we need to protect the  
17 ranges.

18 The F-35 brings a different dimension in the ranges  
19 where you would take off in an F-35 or a legacy aircraft,  
20 you would fly within a certain distance from each other.  
21 You would fly with a wingman that you could either see or he  
22 is not that far away. F-35 -- you might be 10 or 15 miles  
23 apart between airplanes and maybe 50 or 60, 70 miles apart  
24 between a flight of four. That type of airspace needs to be  
25 protected.

1           The ranges, our weapon systems for the range of our  
2    weapon systems that require the safety zones required for  
3    drop zones -- we need to be able to protect the air-to-  
4    ground piece as well because we still have a requirement for  
5    the high-end fight.  Although we talk a lot about air-to-  
6    air, we talk a lot about this maritime environment, we have  
7    to be able to train with our maneuver elements on the  
8    ground.

9           Finally, for new systems, we rely on places like Fallon  
10   or places like Northern Edge, that exercise in Alaska, or  
11   Red Flag or Nellis or China Lake for them to have the most  
12   updated systems.  So we have to maintain updated systems.  
13   So when our airplanes fly against a high-end threat, they  
14   are actually flying against those high-end systems.

15          The simulation.  I think all the services are in the  
16   same drive to make sure that we have our simulators that are  
17   networked together.  So even on MEU, marine expeditionary  
18   unit, missions today, we can actually fly in Cobras, Hueys,  
19   V-22's, AV-8B's, and we can link those systems together to  
20   be able to fly those missions.  We endeavor to do that with  
21   the F-35 and all our strike assets.  But that high-end fight  
22   is something that, as a matter of fact, we are going to do  
23   it in Fallon and we are going to do it at Red Flag, and we  
24   are practicing that at our next weapons and tactics course.

25          Senator Wicker:  All right.  We are going to try to

1 give you a Seapower title that gives you what you need.

2 Admiral Grosklags, do you have anything you need to add  
3 in this, your final testimony before this subcommittee? You  
4 have the last word, sir.

5 Admiral Grosklags: Sir, I will only say -- I will  
6 reiterate what I said at the start, that the additional  
7 funding that is likely to be made available in fiscal year  
8 2018 and fiscal year 2019 is absolutely critical to  
9 increasing our lethality, but just as critical to making  
10 sure that we can get our readiness back up on step because  
11 we can only be lethal if we have ready, available airplanes.  
12 That is absolutely critical.

13 So we appreciate the Congress' in general but this  
14 subcommittee's, in particular, support for getting there. I  
15 would just again reiterate that we are almost halfway  
16 through fiscal year 2018, and we need to get those dollars  
17 available to us as soon as possible so we can execute them  
18 as efficiently and effectively as possible.

19 Thank you.

20 Senator Wicker: Well, I hope we can have a signing  
21 ceremony the evening of March 23rd.

22 Thank you, gentlemen. Appreciate it.

23 This hearing is closed.

24 [Whereupon, at 4:09 p.m., the hearing was adjourned.]

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