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HEARING
ON
NATIONAL DEFENSE AUTHORIZATION ACT
FOR FISCAL YEAR 2020
AND
OVERSIGHT OF PREVIOUSLY AUTHORIZED
PROGRAMS
BEFORE THE
COMMITTEE ON ARMED SERVICES
HOUSE OF REPRESENTATIVES
ONE HUNDRED SIXTEENTH CONGRESS
FIRST SESSION
SUBCOMMITTEE ON SEAPOWER AND
PROJECTION FORCES HEARING
ON
**DEPARTMENT OF THE AIR FORCE
FISCAL YEAR 2020 BUDGET REQUEST FOR
SEAPOWER AND PROJECTION FORCES**

HEARING HELD
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HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
SUBCOMMITTEE ON SEAPOWER AND PROJECTION FORCES,
Washington, DC, Thursday, March 14, 2019.

The subcommittee met, pursuant to call, at 10:01 a.m., in Room 2212, Rayburn House Office Building, Hon. Joe Courtney (chairman of the subcommittee) presiding.

Mr. COURTNEY. Again, I am calling to order Seapower and Projection Forces hearing Department of the Air Force Fiscal Year 2020 Budget Request.

Again, we are always kind of trying to, you know, dovetail with the floor schedule, and as the witnesses know, we are going to have a vote called within a few minutes or so.

The good news is it looks like it is a one-and-done vote, so I think we can just keep rolling here and—but, again, given the fact that it is also a flyaway day, you know, again, member schedules may be also kind of running up against the hearing schedule here today.

So in the interests of moving along, I am going to waive my opening statement and enter it for the record and yield to the ranking member, Mr. Wittman.

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

Mr. WITTMAN. I want also to bypass my opening statement and enter it into the record.

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

Mr. COURTNEY. Thank you. Okay, well, gentlemen, the floor is yours. And your—

Secretary ROPER. Chairman Courtney, Ranking Member Wittman, thank you very much for the hearing today and for your interest in the Air Force and where we are going to implement the National Defense Strategy.

In a little different twist, I would actually like to ask General Fay to begin, because the context of the security environment we are in and trying to make acquisition, my part, deliver for the warfighter, is what we are all about.

So to set the stage, I will turn it over to him and then tell you what we are doing to make the Air Force's acquisition system competitive in this century.

**STATEMENT OF LT GEN TIMOTHY G. FAY, USAF, DEPUTY
CHIEF OF STAFF FOR STRATEGY, INTEGRATION AND RE-
QUIREMENTS (A5), DEPARTMENT OF THE AIR FORCE**

General FAY. Good morning, Chairman Courtney and Ranking Member Wittman and distinguished members of the subcommittee. Thank you for having us here today to provide testimony on Air Force force structure and modernization.

I am Lieutenant General Tim Fay, as Dr. Roper said, deputy chief of staff responsible for strategy, integration and requirements on the Air Staff.

I want to take just a quick minute or two to discuss the strategic environment facing the United States Air Force. As the National Defense Strategy tells us, we face an increasingly complex global security environment, characterized by overt challenges to the free and open international order and the return of long-term strategic competition.

Our United States Air Force must be ready to compete, deter, and win in this complex and evolving security environment. We must defend the homeland, provide a safe, secure and effective nuclear deterrent, and be able to defeat a conventional enemy while we also deter opportunistic aggression in another theater and continue to disrupt violent extremists. And the Air Force must be prepared to do all five of these missions every single day.

The National Defense Strategy drives how we design and modernize our forces. It highlights the need for a larger Air Force. As the bipartisan National Defense Strategy Commission stated in its final report, the United States needs a larger force than it has today if it is to meet the objectives of the strategy.

The Air Force, Navy, and Army will all need capacity enhancements. Additionally, the same report acknowledges that the Air Force will need more stealthy long-range fighters and bombers, tankers, lift capacity, and intelligence, surveillance, and reconnaissance platforms. The Air Force analysis aligns with the conclusions of the National Defense Strategy Commission.

We look forward to your questions in discussing the way ahead for our Air Force with you all today. Thank you.

**STATEMENT OF DR. WILLIAM B. ROPER, JR., ASSISTANT SEC-
RETARY OF THE AIR FORCE FOR ACQUISITION, TECHNOL-
OGY AND LOGISTICS, DEPARTMENT OF THE AIR FORCE**

Secretary ROPER. Thank you, General Fay. Mr. Chairman and Ranking Member Wittman, distinguished members of the committee, during this period of our national security, acquisition really has to have a different mindset. Gone are the days of dealing with violent extremists, at least that being the only mission we are doing. It will continue into the future, but our focus needs to be on competing with peers again. And that requires regaining a competitive mindset in acquisition.

Days and weeks count. We have to speed up the pace at which we deliver advanced capabilities for the warfighter. And though that may not see the erosion of our dominance today or tomorrow, it will eventually, if we don't play the long game in Air Force acquisition.

A major focus over the past year has been speeding up the pace. We simply cannot hope to keep our dominant edge if the rate at which we field capabilities is slower than our opponents. With authorities that you have given us, specifically section 804 and the ability to tailor our 5000 programs, we have removed 78½ years of unnecessary schedule from our programs.

This is time that would be wasted on things that are not value-added for delivering for our warfighters, and the demand signal from our warfighters could not be higher to deliver faster and give them options they do not have today.

In addition to speeding up the acquisition system, we are trying to bring in new and better practices that let us do things smarter. We have had very successful competitions over the last year that have produced over \$15 billion of savings. And although we are very proud of that in acquisition, the kudos should be equally shared with our MAJCOMs [major commands] and requirements owners. They set the bar where we can have strong competition and see the cost savings from them.

We are also pursuing digital engineering more broadly. It is a new technology that allows us to have more validated and more confident designs that can move into production.

Our ground-based strategic deterrent program is leading the charge. Its digital models are simply eye-watering. They allow us to do millions of design trades in a single day, understanding how a design could change performance, could change cost.

They have set such a high bar, we are starting to rotate junior acquisition professionals through that program, so as they become future leaders, they have this mindset of what digital engineering could do for future programs—reduce cost and make us a more confident buyer—and we are very proud of the work we are doing to work with the entire industry base.

It has been long known that the Defense Department has had a difficult time working with small businesses, especially commercial tech startups. Last week, we did a pitch day in New York—a completely different thing for the Department—where we had small businesses in to pitch their ideas, and if we thought they aligned with our mission, we were able to award them a contract and pay them in less than 15 minutes. That is an unprecedented shift from the 3 months it takes us today.

We cannot compete and win in the long term if our acquisition system is not connected to the vibrant tech industry base in this country. And that industry base is not just defense; it is now commercial and dual-use companies.

We must learn to work with them and work at their pace or we risk our future superior edge. And I am delighted to say that the experience we had last week—awarding 51 contracts worth \$8.75 million in a single day—has set a new bar for us.

We do not want small business to be small anymore. It is a strategic endeavor for the Air Force.

And finally, we are all familiar that 70 percent of the lifecycle cost of a program is in sustainment, but we have put very little technology into that area of the Air Force. We have created a Rapid Sustainment Office, a new program executive officer, specifically to inject high-tech technologies into the business of sustainment.

And in less than 4 months, I am delighted to say they are additively manufacturing a variety of plastic and metal parts for airplanes. They are using cold spray technology to fix parts at the depot, instead of scrapping them. They are using over 140 predictive maintenance algorithms on the C-5 and B-1 that allow us to predict maintenance issues before they occur, saving cost and increasing readiness, and are using lasers on robots to de-paint aircrafts, saving over a million dollars per stripping job.

This is just a sample of what could be done in sustainment if we continue to bring commercial technologies in. We need to do all of these things well if we are going to compete and win in the long term. We can't imagine winning if we are not fast. We can't imagine winning if we are not working with the entire industry base. And if we are going to afford a cutting-edge future Air Force, we must lower the cost of sustainment to afford it.

So expect, over the coming year, us to focus on these four pillars and to keep your committee apprised of our progress.

Thank you again for the hearing today and for your interest in our important mission. And thank you for your service to this country.

[The joint prepared statement of Secretary Roper and General Fay can be found in the Appendix on page 35.]

Mr. COURTNEY. Well, thank you to both witnesses. Again, the vote was called during the opening statements. Again, we will try and see if we can keep rolling along, but if not—if we don't get another member from my side, I think we may have to just take a very brief—a very, very brief recess and come right back.

So obviously, this subcommittee has been wrestling with the issue of tanker for about three or four Congresses, if not more, and I know, Dr. Roper, you made a visit to Boeing earlier this week.

I guess one sort of threshold question is, you know, given the news that the 737s were grounded yesterday and the frame for tanker is a Boeing 767, if you could just kind of comment about whether or not the Air Force is looking at any kind of similar characteristics of the two planes that, again, the Air Force may be concerned about given, again, recent events.

Secretary ROPER. Yes. Mr. Chairman, I was at Boeing earlier this week on Monday with General Miller, because we have recently had to shut down the line due to foreign object debris on the aircraft. So these are things like trash, tools, nuts and bolts that are simply unacceptable to have on our airplanes.

General Miller and I walked the line, both the 767 as well as the tanker line, to see what remedial actions and corrective action plans Boeing is putting in place. To say it bluntly, this is unacceptable.

FOD, or foreign object debris, is something we treat very seriously in the Air Force. Our flight lines are spotless. Our depots are spotless, because debris translates into a safety issue.

We were there to review corrective action plans to fix the root cause, but also the containment plan to ensure that planes coming off the line had been cleaned of debris.

I am satisfied with Boeing's containment plan, and also due to great work by DCMA [Defense Contract Management Agency] and our program office. Planes right now are taking on average five

sweeps to reduce them from this significant FOD issue, but I am very confident that the plane, once swept, is safe to fly once leaving the factory. And in fact, General Miller and I accepted an airplane and flew down to Altus [Air Force Base] this week.

But that is not how we should be accepting airplanes, sweeping them multiple times. They should be clean on delivery. And so we will be increasing inspections both on the tanker line and the 767 line. We are going to be doing spot checks periodically. We are going to be tracking the reduction of FOD aircraft to aircraft. And if we don't see progress, then we will have to raise the stakes.

I can't speak to any other line that Boeing is running. We do not buy 737s in the Air Force. But I am confident with our ability to contain FOD, and then the jury is out on whether the corrective action plans will be implemented.

Boeing's processes are valid. They will prevent FOD on aircraft. They simply must follow them. And that is a culture and a discipline issue. And so, on our Air Force, we expect discipline on our flight lines. We expect the same discipline on the production line for people that make critical aircraft for our warfighters.

Mr. COURTNEY. Thank you for that answer. So I think we are going to, again, just take a brief timeout here—hopefully, it would be a 20-second timeout, like in basketball, as opposed to a full timeout—because it looks like, again, it is a one-and-done.

So if—again, we will just stand in recess temporarily and hopefully we will resume very shortly. So, thank you.

[Recess]

Mr. COURTNEY. I just wanted to cover an issue which again, it has been another sort of topic over the last two or three Congresses for this subcommittee, which is that Air Mobility Command recently acknowledged safety issues associated with the legacy four-bladed propellers on the C-130H fleet and signed off on a plan to upgrade.

It is also our understanding that the decision to move forward with these upgrades resides in your two offices. First of all, if you could just confirm that, for the record, if that is correct, and also what is your timeline to review and approve the upgrades?

General FAY. So, Mr. Chairman, what I can confirm is, yes, we are two of the folks that are responsible for working through that paperwork and we are in the process of doing that right now. We were looking at that actually this morning, and we think we are going to be able to expedite getting through that paperwork very rapidly.

Just some context, sir, on that issue if we would, essentially, what we are talking about is, you know, we put safety first. We are focused on that very much, and we are working very carefully with all the affected parties to make sure we understand exactly where we are on this issue and that we are moving out rapidly to address it and correct it.

Specifically, some of the things that we have already done to address this issue and get after it, in addition to what I will say is our initial actions to make sure we understood the state of the fleet, we did an inspection of over 1,500 of those blades almost immediately, identified 2 that were of interest, and of those 2, 1 was found to be, you know, suspect and we addressed that right away.

And one thing I would just say, these aircraft are in our total force and our Reserve and Guard Components, and some of our most experienced and most effective airmen are in our Guard and Reserve. These are folks who were on Active Duty. They did a lot of years and then they got out and they continued a lot of them to serve.

Some of these folks are what we call generational. We have got fathers and sons who have crewed the same aircraft that they take great pride in them because they are citizen airmen in their community, and we were really pleased with the fact that we had great airmen getting a good look at those props and giving us their opinion.

Now, we didn't stop there. We continued digging. We have flown this fleet now for 60 years. We have got 15 million hours of flying on this fleet, so we have mounds of data, and we dug into that data to get after this problem. And as you can imagine, if it is 60 years old, it wasn't digitized, so it might have taken us a little while to get through all of that data, but we did, and what we did was we identified that before 1971—and I am being specific, 1971 actually—the manufacturing process on those propellers was more manual than automated.

We changed that process in 1971 to a more automated process, so the propellers manufactured before 1971, we identified as at risk. So we removed those propellers from the fleet. There was about 60 of them that we removed.

What I can report to you is we got a report yesterday that 55 of those 60 have been replaced and that the last 5 should be complete this week, and then we are going to work through the backlog of the supply chain to make sure we get after getting our supplies healthy again, sir.

Mr. COURTNEY. Okay, just so I am clear, because, I mean, the Navy is moving forward in terms of replacing the blades with the eight-bladed propellers, and mobility control has said that this is a, you know, mission-critical effort in terms of replacement. Is that again where the Air Force is going in terms of replacement of the blades as opposed to sort of examining them?

General FAY. So, sir, what I can tell you is on three separate occasions we have worked what I will call a 1067 process, which is a way to move rapidly to make a change to an airplane, and we have already replaced 11 of the blades or 11 aircrafts in the fleet now the blades have been replaced on. And thanks to your help, we have been able to actually get funding to replace another 33 that are in work.

So of a fleet of about 150 of those C-130H model aircraft, about 44 we have already worked through that process. So we are going to continue to work through the 1067 process that we received, I believe, the 21st of February, as rapidly as we possibly can and assess how we can work with Air Mobility Command, our support program office, our engineers, our Guard and our Reserve teammates to get to a satisfactory answer on that.

Mr. COURTNEY. Thank you. I am going to yield to Mr. Wittman.

Mr. WITTMAN. Thank you, Mr. Chairman. I am going to go ahead and yield to the other members to pursue their questions, and then I will follow up after they have had their time.

Mr. COURTNEY. Congresswoman Luria, you are up.

Mrs. LURIA. Well, thank you, Dr. Roper and Lieutenant General Fay. We were recently briefed on the Mobility Capability Study and what is put out in the budget in the Air Force We Need analysis doesn't seem to match for airlift and aerial refueling numbers versus the Mobility Capability Study which gave, you know, a very rosy picture of where we stood on airlift. Can you explain the differences between those numbers?

General FAY. I can. And it comes back a little bit to my opening statement is—the Air Force we have is too small for what the nation has asked us to do overall. And so when we took a look at those two specific studies, the Mobility Capability Requirements Study and the Air Force We Need Study, there was three major differences: risk, timeline, and the scenarios we use to do those studies.

For the Air Force We Need Study, as you recall, you asked us to take a look at the Air Force we need based on the strategy unconstrained by budget. So we took a look out to about late 2020s, early 2030s timeframe, we looked at the operational plans and defense planning scenarios, and we said, what would it take, budget unconstrained, to get to a low-risk, low- to moderate-risk force? And so that was kind of what drove us there.

On the Mobility Capability Requirement Study, they have a different, if you will, kind of charter. They were asked to look at current operational plans today based on the combatant commanders' needs, and assess if we were able to meet those combatant commander needs. So my understanding is that TRANSCOM [U.S. Transportation Command] study concluded that at a higher level of risk than the Air Force We Need Study, they were able to meet the combatant commanders' needs at the 479 number.

Mrs. LURIA. So just digging a little bit further into that, when you are looking at the combatant commanders' needs versus the Air Force We Need, was the Air Force We Need Study using a more limiting OPLAN [operations plan] than the combatant commanders? Or is it purely in the level of risk that they assumed?

General FAY. So for the Air Force We Need Study, because we went out to 2030, we took a look at the current operational plans, but we also made some assumptions based on the National Defense Strategy of some planning scenarios that we would anticipate having to address in that timeframe.

In this forum, what I can say is that drove us to what I will say is a larger number of tankers in the Air Force We Need Study than showed up in the Mobility Capability Requirements Study, and that would be expected based on timeframe, the additional scenarios that we looked at out in the 2030 timeframe versus today, and also the fact that because we were budget-unconstrained in the Air Force We Need Study and we were strategy driven, we were able to look at that moderate risk force.

Mrs. LURIA. Okay, I think what would be really helpful to us is if you could provide a comparison of the two, so that we could basically see where that breakdown was and where the risk is taken in the Mobility Capability Study that is not taken in an unconstrained physical environment, so if there is a way that you could provide that to the committee, that would be helpful to us.

General FAY. Ma'am, we will take that for the record.
[The information referred to can be found in the Appendix on page 61.]

Mrs. LURIA. Thank you. I yield my time.

Mr. COURTNEY. Thank you.

Mr. Gallagher.

Mr. GALLAGHER. Thank you, Mr. Chairman. So as we debate the budget, I think we are basically having a debate over the National Defense Strategy and whether the budget moves forward towards implementing that strategy, and I think one of the underappreciated conceptual shifts in the National Defense Strategy is what I view to be a move from reliance on deterrence by punishment, particularly strategic deterrence by punishment, to conventional deterrence by denial.

And I think most of us would associate the Air Force with the former rather than the latter, and so to the extent you agree that there is a lot in the NDS about denying our adversaries, China foremost among them and Russia a distant second, the ability to achieve their objectives in real time or at least degrade it or raise the cost of the first shot, how do you think about this shift as it relates to the Air Force's role in the joint force, the platforms you buy, the concept of operations that you develop?

General FAY. Sir, so the way I would address it is the Air Force is actually extremely well postured to support the joint force, kind of in what I will say is this complex security environment. It is going to be characterized by great distances. It is going to be characterized by rapidity, so we have got to move fast. It is going to be characterized by volume of fires.

It is a very different concept than we have been operating in the last 20 to 30 years where we have had uncontested environments, where we have had time to build up bases that are secure, that we have had time and ability to operate across domains that are essentially we have total superiority over.

So what I would say is, in the force design work and in the good acquisitions acceleration that we are seeing from my acquisition teammates, that we are working to build you an Air Force that is able to address that security environment and provide that, if you will, ability to deny objectives and deter upfront, and if deterrence fails, then a fight and win.

Secretary ROPER. Congressman, for my part, I am a big proponent of the National Defense Strategy. Before joining the Air Force, I got to serve on the steering committee for it and write portions of it, so I am a believer that we have to treat our peer competitors seriously.

What we have to be able to bring to the table on the acquisition side of the Air Force is a competitive mindset, because our adversaries are not a fixed target. They are moving. They are evolving. They are able to build systems that are commensurate with ours.

So we can't just build an Air Force that defeats them. We have to be able to build one that competes with them over time. That means being able to field things faster so that our adversaries have to react to us and not us to them. It means that we have to be able to explore high-tech concepts again, so this is a big shift away from where we have been dealing with violent extremists.

I am very happy with the first step that the Air Force has taken. I am happy with our ability to speed up the acquisition programs, but this is a first step. This will be a long journey over decades. And so we have to adopt that competitive mindset that every day counts. And the great thing that we have working with our requirements owners and MAJCOMs is that we are in lockstep.

Time matters. Let's impose cost, create conundrums, deny objectives, which is very different than trying to defeat every piece of force structure that an adversary has.

Mr. GALLAGHER. I appreciate the emphasis on time and I appreciate your comments in your opening testimony about the need for a more productive relationship between industry—industry beyond sort of the traditional defense companies and the Pentagon.

I guess maybe to ask it a different way, as you saw that conceptual shift towards great power competition and to deterrence by denial, what changed as a result? I mean, what in this budget has increased or decreased to align with that shift?

Secretary ROPER. Congressman, I will speak from the acquisition side and then turn over to my colleague. The thing that is very different in this budget are the way in which we are buying things. There is broad use of the section 804 authority to accelerate programs, especially critical programs for the warfighter.

There is broad tailoring of acquisition programs to take time out. And the fact that the Air Force has been able to remove 78½ years of unnecessary time in 9 months speaks to buying a different way. We are getting back into the business of doing things in the real world vice paper studies, flying before we buy, and trading off performance if it allows us to field on time, and that is done in partnership with our warfighters.

So though a lot of the systems are the same, we are starting by buying them differently. And what I hope that you will see in subsequent budget are big idea, high-tech concepts coming out of our laboratory and into programs of record. If we don't do that, we will accelerate the current Air Force well but not be able to replace it with follow-on concepts.

General FAY. Sir, coming back to kind of what has changed in this budget, what I would call out is our research, development, test, and evaluation budget line. If you take a look, I think we were 30.9 last year, this year 35.4, about a 12 percent or 13 percent increase, if I am doing the math right, and what are we investing in? Things like hypersonics, things like directed-energy, things like propulsion technology leaps.

In addition to the platforms that you are seeing, the B-21, the F-35 high-end fight, I would just also call out our space portfolio. Significant increases in space portfolio, fourth year in a row, because obviously, we are seeing that as a domain that is contested, and I think that is about a 17 percent increase over where we were last year just in the space portfolio alone.

Secretary ROPER. And the space portfolio is one that is truly benefiting from the rapid authorities. Our new space programs which are meant to contend with a contested environment are benefiting from being able to move quickly, begin designing early, and be able to trade off performance to deliver on time.

So again, thank you to all of you for supporting those in the past.

Mr. COURTNEY. Thank you. Mr. Langevin, to be followed by Mr. Waltz.

Mr. LANGEVIN. Thank you, Mr. Chairman. Secretary and General, thank you for being here. Thanks for your testimony and the extraordinary work you are doing.

Secretary Roper, let me start with you. We admire your very forward-leaning approach leveraging the gamut of acquisition tools and authorities so that we remain the global leader and technology leader.

I am concerned, however, that in an effort to field technologies with speed and agility that we might overlook critical vulnerabilities in our weapon systems. So my question—first question is, how is the Air Force building cyber and EW [electronic warfare] resiliency into its new acquisitions and modernization efforts to ensure its aircraft can function in a contested environment?

Secretary ROPER. Mr. Congressman, there are two primary ways. We have increased funding for our cyber red teams, which go in and try to find vulnerabilities so that we can fix them before we field. That is an effort I hope to continue seeing grow, because we have to—there has to be a human factor in assessing our systems outside the program office, so I am happy with the work we have done. I would like to see it go broader.

Another big pivot we are making is shifting from waterfall software development to agile—agile DevOps—and that comes with better development tools, cloud-based tools where debugging and having consistency in code is easier to enforce vice doing everything in a very tailored boutique fashion.

So our cyber resilience should go up as we shift to modern software practices because we are really leveraging what commercial industry has already trail blazed. We are not the only entity with a huge cyber, you know, threat issue, right? Companies like Google and Amazon and Facebook face this all the time. They have shifted to cloud-based tools for a reason. You can develop software faster and the tools are more secure.

So as that becomes the norm in our programs, I hope that we will start, one, seeing the initial vulnerabilities go down, and then our red teams being able to find those exceptions to the rule ahead of us fielding.

Mr. LANGEVIN. So you are building the resilience in and in measurable ways, as well, through the acquisition at all stages of acquisition and also, importantly, by design?

Secretary ROPER. Yes, Congressman. I predict that in future, as these things mature, that security will become a fourth pillar in evaluating programs: cost, schedule, performance, but security. Does it matter if we are buying something that is not secure?

So I do think we need to revisit the standards for cybersecurity so that we have a minimum set that we believe is acceptable or else we are not a buyer. And so I am hoping that these two initiatives will drive us towards having a minimum set of requirements for any program, and if you can't meet them, then we have to work with someone else who can.

Mr. LANGEVIN. Okay. Now that goes both on the cyber and the EW resiliency?

Secretary ROPER. Cyber, EW, and supply chain as well, Congressman. I worry a lot about a globalized supply chain. It doesn't mean that we have to control the global supply chain, but it may mean that we need to start developing standards for fault tolerant design.

So SpaceX and their Falcon 9 uses a variety of different mission computers and processors and distributes the functionality across them, so if any one component fails, right, the team, the system, the architecture can succeed. It seems like a really good way to design things today when we are spread out across the globe in terms of components, but we don't have a standard in the Air Force. And I think in the future we will need one because we are not likely to be able to thrive if we can't benefit from the global supply chain. So it is supply chain, EW, and cyber, sir.

Mr. LANGEVIN. Okay, thanks. And so obviously, that is viewed as the supply chain is essential as the industrial base continues to grow. How is the Air Force working with the industry to ensure that they are part of the solution on cyber or EW?

Secretary ROPER. On both of those, sir, we can't do it alone. We don't make anything in the government, so we are only as good as the industry partners we work with. We have invited industry in towards helping standardize the tools that we are using for DevOps. We are hoping to be able to provide hardened and secure container stacks that industry can use, not just the primes, but their sub-prime, which is really where we worry.

We don't worry as much about the security of a major defense prime in their networks. We worry about their subs and the subs of subs, and we haven't done much to help them, so I think if we can standardize how coding is done and provide secure mechanisms to do it that our government furnished, that is a good first step.

And then the second needs to be figuring out how we deal with a supply chain base that has spread out globally. How do we deal with systems that we can't control? And the SpaceX Falcon 9 example gives an insight as to how we might proceed.

Mr. LANGEVIN. Okay. And how would you work—how are you working to develop a culture also that incentivizes risk-taking while accepting smart failure earlier in a program design? I know my time is up, so why don't we do that one for the record, if you will?

Secretary ROPER. Mr. Chairman, that is an important question. Would you mind if I took a minute to answer it?

Mr. COURTNEY. Go ahead.

Secretary ROPER. I appreciate your forbearance, sir. I am glad you asked that, sir. Risk-taking is everything. If we don't get the risks that fail, we are probably not getting the ones that succeed.

We recently created an award in the Air Force for risk takers who don't succeed. It is called the Spectacular Learning Event Award and we just gave out three, one to our 500-pound bomb UON [urgent operational need] team, our Air Force Special Warfare Division UAV [unmanned aerial vehicle] team, and our High Power Microwave Team at AFRL [Air Force Research Laboratory]. All tried, all failed, but we learned a lot.

Their acquisition path was smart. We need to celebrate those people and not punish them. So I am glad we have an award in

the Air Force and I hope in future I will be able to tell you about successive failures that have taught us how to be better acquisition professionals. Thank you for that question.

Mr. COURTNEY. You did that in 56 seconds.

Mr. WALTZ.

Mr. WALTZ. Thank you, Mr. Chairman. Yesterday, I introduced legislation to establish a unified combatant command to be known as the United States Space Command. My legislation also repeals section 169 of title 10 which was added by section 1601 of the 2019 NDAA [National Defense Authorization Act]. Section 169 authorizes a Space Command as a subordinate unified command. That authorization is inconsistent with the December 18, 2018, executive memo that directed the establishment of a unified combatant command.

This directive from the President was issued on advice from then-Secretary Mattis and the Chairman of the Joint Chiefs. With unanimous support of the Joint Chiefs, the recommendation was made as a result of lessons learned from the establishment of U.S. Cyber Command.

Secretary Shanahan reaffirmed the Pentagon's support for the unified combatant structure by sending a letter to Congress requesting the prompt repeal of section 169. Mr. Chairman, I ask unanimous consent to submit that letter from Secretary Shanahan for the record.

Mr. COURTNEY. Without objection.

[The information referred to can be found in the Appendix on page 57.]

Mr. WALTZ. So due to these conflicting directives and the importance of establishing a Space Command quickly, I emphasize quickly, to compete with our adversaries in a growing domain, I am asking for my colleagues to support my proposal, H.R. 1746, and for swift action by this committee and both Houses of Congress. It is important that we move forward, in my strong view, with establishing the command in this fashion as this committee continues to review the legislative proposal to create the Space Force that DOD [Department of Defense] submitted to Congress last month.

Mr. Chairman, I believe firmly that we are with space where we were with aviation in the 1940s and the split off from the Army Air Corps. I think this is a move in the right direction. Mr. Roper, I would ask you, in your fiscal year 2020 PB [President's budget], there is resources, there is \$72.4 million for the initial standup of the Space Force headquarters as this first step towards implementing the longer-term vision.

My understanding is funding for the headquarters will include 160 personnel billets to establish the initial elements. Can you just elaborate on why that funding is so necessary as this first step?

Secretary ROPER. Congressman, I think the establishment of the Space Force and the proposal for doing is outside of my responsibilities in acquisition, but I echo your point that the criticality of space could not be higher. No one in this room can live their daily lives without being connected to space-based capabilities.

Our space programs are ones that I track closer. I worry about the collapsed industry base in space within the defense sector. I am excited about the expanding industry base in the commercial side

of our innovation base. We are emphasizing trying to expand the number of defense companies and their technical capabilities while also bringing in commercial counterparts.

The whole focus is to be able to fight and win in space. So while the Department focuses on how to organize to fight, Air Force acquisition is fast-tracking every space capability so that those future warfighters, however they are organized, have the capabilities that they need to fight and win.

Mr. WALTZ. Thank you.

In your testimony and, frankly, across—I was just talking to Secretary Esper and General Milley—and I understand where the NDAA is going in terms of a shift from counterterrorism and violent extremist organizations to great power competition. I am worried. We have seen this movie before in the 1980s post-Vietnam. I am worried about that pendulum swinging too far. Frankly, some of your comments concern me a little bit, as well.

So I want to ask you about light attack. I sent a letter last month with some of my colleagues asking about what happened to that January RFP [request for proposal] for the light-attack birds. So in short, what happened? And I will tell you from my own perspective being on the ground as a special operator, we need that capability.

SOCOM [U.S. Special Operations Command] needs that capability. I can't tell you if I had a dollar for every time I called in for support and they were up getting gas, you know, because the loiter just isn't long enough. So where are we going with that?

Secretary ROPER. Mr. Congressman, I echo your concern. We could swing too far in focusing on peer only, but I am willing to accept as a hypothesis if we are designing for a peer competitor, we should be able to contend with violent extremists.

With regard to light attack, from an acquisition point of view, it is straightforward. We approved an acquisition plan to buy the aircraft if the warfighters and operators had a need, but in order for us to release an RFP, we have to have a funding commitment from the Air Force.

As the Air Force continued experimentation out in the field, we learned what a light-attack aircraft might do. We learned what modifying existing turboprops might do. We saw that there was a competitive industry base in small jets, so specifically based on our TX competition.

I think the Air Force learned there is a variety of concepts to explore, not just the turboprop, so we are going to continue the experiment. We are going to buy two to three of each of the existing planes and continue testing out in the field and hopefully get the right choice and it may be a—

Mr. WALTZ. Sir, just in the interest of time, we have special operators in 60 to 70 countries every given day. We have people out on the ground that need this capability while the Air Force is experimenting, so I would encourage you to take another—I would encourage the service take another hard look at that.

Secretary ROPER. Thank you.

Mr. COURTNEY. Mr. Cisneros.

Mr. CISNEROS. Good morning to both of you. So I have just got a couple questions about our bomber fleet. You know, the B-52s

have been in service a long time and it is going to be in service basically another 31 years. The B-1 bomber not quite as long, but that is going to go until 2040, according to your plan.

Have we already started the research and the development of these bombers of the future?

General FAY. I will take that if that is all right, sir. As a bomber pilot, I get really excited about the opportunity to talk about bombers, as both a B-52 and B-2 former aviator.

What I appreciate, sir, is the fact that this team is supporting us in the recognition that the bombers bring a lot of capability to the joint fight especially in what I will say is the strategic environment we are going to operate in. The range, the payload, the flexibility they bring to the fight are absolutely amazing and are going to continue to be a critical part of the joint fight for a long time to come.

As far as future bombers specifically, what I would just share with this—with this forum is that the B-21 Raider is on track and doing very well and we are getting very excited about that capability and bringing that to the joint fight. It is on time and it has moved to the next stage into the manufacturing and the design kind of level recently, and we are getting pretty excited about the next steps on that.

So what I would say is we are going to continue maintaining a long-range bomber fleet that is able to reach out globally and hold any target on the planet at risk.

Secretary ROPER. And, Congressman, the thing that is impressive about the B-21 program isn't just the fact that it is doing well on design. It has recently completed its critical design review, but it is setting a new standard for thinking about sustainment and software and producibility early. So our goal is to have the bird coming down the line and the software is ready to go on it.

Our software developers are saying they are going to be ready first. So I think we will be able to step back from the B-21 program, look at future programs and say, you really should focus on the tail-end of the program upfront, because by the time your design is fixed, it is too late to get the producibility and sustainability standards that you want.

So I want to give a shout-out to the team working that program, they are doing a great job.

Mr. CISNEROS. So when is the B-21 expected to be operational?

General FAY. So, sir. I can't get specific in this forum. But what I can tell you is it is in the 2020s and we are working very hard to keep that on track and right now it is on target.

Mr. CISNEROS. If it is supposed to be the replacement for the B-52 or the B-1 bomber, why are we continuing to hold onto the B-52 for another basically 30 years, instead of just manufacturing those or developing a plan really to manufacture those?

And I know costs are limited, of course, but, you know, is there a plan in place—

Mr. COURTNEY. Mr. Cisneros, if you could just yield for a second. Just again, for the information of the subcommittee, we are going to be having a classified briefing in April on the B-21, where I think maybe the witnesses might be a little more comfortable to get into more detail, but again, if you want to answer that ques-

tion, I am not—but I just want to at least share to people that we are going to have a chance to get deeper into this very soon.

General FAY. Well, sir, one of the things—just to clarify is that B-52 is going to be with us through at least 2050, so those 1960–1961-built aircraft have a lot of good airframe life on them. They have got amazing firepower that they bring to the fight at range, and we are going to be flying that fleet through the 2050s, so it is pretty exciting.

Secretary ROPER. It is quite remarkable to think that one of our oldest aircraft is going to carry one of our newest high-tech weapons in future, so the B-52 will be very likely the first carrier of hypersonic weapons for the Department. And so I am hoping I will still be able to be in this job to see the first weapon come off of the bird.

It is a great airplane. It can carry a ton of capacity. It has got life left, and we have got modernization efforts to do to extend it into the future. But it will bring the payload capacity we need for the contested warfight.

Mr. WALTZ. I yield back my time.

Mr. COURTNEY. Thank you. And again we are going to have an opportunity to revisit this very, very shortly. So, Mr. Bergman, and then he will be followed by Mr. Golden.

Mr. BERGMAN. Thank you, Mr. Chairman. Now, I am going to base my questions based upon the words that I heard both of you say here. General Fay, you mentioned that we need a larger force. Are we talking product or people or both? What was the frame of reference of that?

General FAY. So what I would say, sir, the answer to that question is both of the above. As you know, we have been working very hard over the last few years to grow the Air Force. We shrunk too small on the people side to the point where we got down and I will use our maintainers as an example of where it really hurt us.

We were thousands of maintainers short of what we needed and that drove terrible outcomes on our ability to fix our airplanes and be ready, and so we have worked really hard to turn the corner on that. And I can report from a 4,000-maintainer deficit, we have closed that gap recently and we are actually, you know, up to speed on the number of maintainers.

Mr. BERGMAN. I hate to cut you off, because the time of 5 minutes goes very fast. In that—in that closing the gap on your maintainers, what percentage of that 4,000 if you will do you expect to stay for 20 years or more? Or do you break that down with like—are you going to have first term, what are you thinking? What is the breakdown of the manpower piece?

General FAY. So, sir, the breakdown of the manpower is historically—and I am going to use some rough figures that we will go back to the record and verify—about 50 percent of our folks that enlist end up doing about a 20-year career now. And we will clarify that.

Mr. BERGMAN. Okay, so roughly 50 percent. I mean, I think that is probably a fair number. Of the 50 percent who don't, what would you—and there is numbers out there and if you want to take it for the record—how many of that 50 percent who don't then spend time in the Guard or Reserve?

General FAY. And again, sir, we can take that for the record, but it is a significant number and it is actually really important for us, because we have invested in those airmen.

Mr. BERGMAN. Well, you have got long—yes, you have got long-term skill sets that you have developed. How do we maintain them over the longest time? It is kind of like the human version of a B-52, okay, because 65-year-old mechanics can do very fine work on an airplane only because they have done it for so long, it is second nature to them.

Dr. Roper, you mentioned that 70 percent of the program cost is in sustainment. So as we do the testing and the development and then actually, you know, complete the program and put it into action, how then—how then do we monitor the fact, are the sustainment costs staying within a norm—you know, a norm of what we had planned on? Any comments on that?

Secretary ROPER. Yes, sir, it is a passion of mine in this job. I think sustainment is something we have gotten accustomed to just paying for; we pay for readiness. And there is a lot we can do to bring the total operating cost of the Air Force down.

One, we should design for it. That is often an afterthought. We design for performance. Programs like the B-21 are designing for sustainability. The next thing we can do is force open architecture into design. We cannot get locked into a single vendor forever. We need to be able to compete parts of it, deal with obsolescence more easily. So we are enforcing open design on our new systems.

What we lack right now is a true incentive to motivate industry to want to design for them. They will likely lose money if they give that to us, so we have to have some alternative way of incentivizing that, which we currently don't have. I have actually got an open call to industry on the 26th of April to come in and talk about what would it take.

And the final thing is, we can shift a lot to our maintainers. If you walk a depot today, you will see amazing people. You will see great Lean Six product process, but you won't see a lot of technology, so we are transitioning additive manufacturing and additive repair, things that could help us fix things locally, so we don't have to kick it back into the acquisition system. All of those I hope will bring down the total cost over time.

Mr. BERGMAN. Thank you. And General Fay, one last one for you. You know, when you are the Air Force Chief of Staff, you have got a lot on your plate, and I am assuming looking at the career histories of the Air Force Chiefs of Staff, they all basically have served their career on Active Duty. They don't come out of the Reserve Component.

How does an Air Force Chief of Staff keep themselves informed of the opportunities and challenges in utilizing the Guard and Reserve in your realm? How do they—how does that Air Force Chief of Staff know what it is like to be a reservist or a guardsman?

General FAY. Well, sir, let me start out by thanking this body for the additional authorities and flexibility you have given us as we work to create more opportunities to move airmen back and forth between components, more flexibility.

Mr. BERGMAN. Defined career—I mean, pretty much defined career paths that that guardsman or reservist can look at and that flexibility of the long-term career?

General FAY. So we have really appreciated that and we are going to continue to work for that because we know that the future is going to be working to retain those people that we work so hard to recruit. They have got to be able to move in and out of the components based on what is going on in their life. That is just a reality that we are going to have to work with you to make even better.

As far as what I will say is I have never seen a total force relationship better in the Air Force between the Guard and the Reserve and the Active Component. We work very closely together at all levels. All of us have what I would say is staffs that are intermingled. I have a number of reservists and guardsmen on my staff. I cannot tell you who they are because they come to work every single day in uniform just along their Active Components, the same in the airplane, the same on the flight lines that—

Mr. BERGMAN. This is a good testament for the Guard and Reserve and I am over my time. I would let you go on forever, but the chairman there would get mad at me. Thank you. I yield back.

Mr. COURTNEY. No, I won't. And that actually is a good train of thought, so next up is Ms. Hartzler.

Mrs. HARTZLER. Thank you very much. And gentlemen, it is good to see you here and excited to hear, General Fay, you know, your B-2 background at Whiteman Air Force Base, and that your help—and your position that you are in right now. I very much appreciate it. Excited to have Major Andrew Kurgard on your staff now as a fellow—a fellow B-2 pilot there, so we are glad. And Dr. Roper, it is good to see you again.

I am excited about the focus that you have brought to this as we move forward as far as sustainment and the software and helping get this acquisition program more lean and mean, so we can get the platforms we need quicker.

But a couple of questions regarding the B-2 and the bomber. So, Dr. Roper, as you know, I am a strong proponent of the Defense Management System, the DMS, upgrade which is critical to the survivability of the aircraft.

We have been funding this, the research, we have been trying to get this out there as quickly as possible. And I understand that there are some issues with it and it is very vital for our survivability. So first of all, can you just give me the status of the program?

Secretary ROPER. Yes, Congresswoman. And I am a big proponent of the B-2, as well, still a fantastic-looking aircraft.

Mrs. HARTZLER. And active—performing, not just looks. It looks great, but it performs good.

Secretary ROPER. It set a new standard. You still feel something when you see one fly overhead. The DMS-M [Defensive Management System Modernization] program right now, I would say there is good and bad. The good is that there has been a 13 percent growth in the cost of the program because we have added capabilities in. We have made the system better because of the criticality of the platform to continue giving us the ability to penetrate until we get the B-21 fielded.

The downside is that after we passed our critical design review in November, although I don't think we have formally declared it I predict we will see a 6- to 8-months slip in the delivery of the capability simply due to the fact that Northrop Grumman is shifting from waterfall style development to agile.

I have a little patience on this because all of our industry partners are struggling with this transition. Other programs like OCX [Next Generation Operational Control System] or the ALIS [Autonomic Logistics Information System] system for the F-35 are also going through these growing pains. So we are going to help Northrop continue this pivot, try to regain as much schedule as we can, but I think the DMS program is really setting up Northrop to try to hit their stride for B-21 coding.

So this program is important to me as a dress rehearsal for B-21, so I am tracking it closely. I visited the vendor 2 weeks ago with General Ray and we are going to be watching their progress until they get back on track and deliver.

Mrs. HARTZLER. That is great. So there is—you are thoroughly committed to continuing to make sure the B-2 gets this, right?

Secretary ROPER. Yes, ma'am. It is fully funded in our program, and as I mentioned, it is really a dress rehearsal for the B-21, so it has double importance to me.

Mrs. HARTZLER. So with a 6- to 8-months slip, when do you expect the procurement system to actually be on the B-2?

Secretary ROPER. So, ma'am, I think—so I really—I have got to give the program office time to come back to me with, no kidding, what is the delay going to be? I expect that we will see everything in the program slide about 6 to 8 months. I don't expect that there is going to be a disproportionate—this is just simply getting the code done, but let me take that for the record so that I can get back an answer that is informed by the current program office estimate.

[The information referred to can be found in the Appendix on page 61.]

Mrs. HARTZLER. Great. I will look forward to receiving that.

Lieutenant General Fay, we are talking about the B-21, and I am very excited about it, and I have been very pleased that it is on time, it is on budget, and it is progressing, and this is going to be an exciting, exciting aircraft. And as a co-chair of the Long-Range Strike Caucus, I am very excited about this capability. And it has been stated by the Air Force they are going to be based at Whiteman, which we are very excited about, Dyess and Ellsworth, so has a decision been made on the basing order? And if not, when can we expect one?

General FAY. No, Congresswoman, a decision has not yet been made on the basing order. But what I can tell you is as we decide to retire an aircraft and base B-21s, it will be based on the Air Force Global Strike Command. We are taking a look at that and telling us when he has got enough B-21s on the ramp and available in an operational status before we are going to, you know, move forward on that.

So that is going to be a little while. And so that will be the Global Strike commander who makes a recommendation to the Chief and Secretary on where and when.

Mrs. HARTZLER. Okay. Very good. Thank you very much. I yield back.

Mr. COURTNEY. Thank you, Ms. Hartzler. Now the ranking member, Mr. Wittman.

Mr. WITTMAN. Thank you, Mr. Chairman. I would like to thank our witnesses for joining us.

Lieutenant General Fay, I wanted to get you to elaborate a little bit more on a comment that you made earlier and that is the divergence between the OSD [Office of the Secretary of Defense] CAPE [Cost Assessment and Program Evaluation] assessment of mobility and then the Air Force We Need assessment, there are significant differences. You pointed to some of that.

Let me ask for your assessment of risk there. A week ago, we had General Lyons here from TRANSCOM, and when we asked the question where he said there was a significant risk with where we are with the current tanker force structure and I asked him to elaborate on that, he said that significant risk in their assessment is unacceptable risk. Do you share his evaluation that keeping or not going to the requisite number of tankers that the Air Force projects in their assessment creates unacceptable risk for the Air Force?

General FAY. Sir, what I cannot do is I can't, you know, second-guess a combatant commander's assessment or evaluation. He is the one who owns the mission. He is responsible for that. In my roles as a headquarters Air Force guy, I am responsible for organizing, train and equip, providing forces for that combatant commander.

What I can tell you, though, is what the Air Force We Need Study shows us is that we need to be bigger in a number of mission areas. It is not just the tankers. We are below where we need to be in fighters. We are below where we need to be in bombers. We are below where we need to be in C2, command and control, aircraft; intelligence, surveillance, reconnaissance.

So sir, what I would say is you drag that back into the Air Force we are at 312, with the 5 missions I described that we have been assigned, we are just too small.

Mr. WITTMAN. Let me go back again to the original question. Do you agree with his assessment that the current force structure for tankers is an unacceptable risk?

General FAY. Sir, again I can't speak for General Lyons and so what I understand—

Mr. WITTMAN. You would know for your airmen and for the Air Force's request to perform that mission what the risk is to your airmen and what the risk is to the Air Force. So I am asking for your professional assessment of that.

General FAY. So what I understand, sir, is there was a divergence between the studies that we have looked at internally in the Air Force that says 479 is acceptable and the MCRS, the Mobility Capable Requirements Study, which we also understood was acceptable. So what I owe you, sir, is to circle back and understand because I was not aware that there was a discussion about it was now unacceptable. I believed it was deemed acceptable, so I owe you a come-back for the record, sir, of where we are disconnected there.

[The information referred to can be found in the Appendix on page 61.]

Mr. WITTMAN. Well, General Lyons stated that it was significant risk associated with the OSD CAPE assessment of what the tanker force structure would be numbers-wise. Obviously, the Air Force's assessment is different, so I want to get your assessment on where OSD CAPE is with the number that they project and whether there is an agreement with the Air Force that there is significant risk there.

And when I asked General Lyons to elaborate on significant risk, he said significant risk is unacceptable risk. So I really need for you to define that so that we can use that going forward in our discussions about where we target our efforts in building that capability.

General FAY. Ranking Member Wittman, we will do that. I understand that he also—when he called that it is significant, I was just not aware of the second part that he deemed it unacceptable.

Mr. WITTMAN. He did. I asked him the question specifically, would you quantify significant risk as unacceptable. And he answered in the affirmative.

General FAY. Sir, yes, sir.

Mr. WITTMAN. One other thing too which lends itself to that is, as we are looking to get to the 479 number and the delivery of KC-46As and the challenges that we're having KC-46As with cameras and booms, we are going to have to keep KC-135s it appears to me longer. What are you doing with modernization and service life extensions to be able to keep KC-135s available for a longer period of time? Because without that, you do not get to 479.

General FAY. Yes, sir. And just for what it is worth, I always like that, again as a bomber pilot, I like to call out my tanker brothers and sisters that do just an amazing job every single day, and I cannot tell you how many situations I have been in where they are perhaps the most welcome sight you can imagine on a dark night. So just give credit where credit is due.

And, sir, our KC-135 fleet is scheduled to remain in the fleet until 2040 and beyond, so what I would say is we are taking all prudent steps to ensure, you know, that we maintain and operate those aircraft in the appropriate manner to make them last through 2040 and beyond.

Some of the things that we are looking at and working on on that is in that realm with the KC-135 is with some of the communications systems in the way we connect those aircraft and bring them into what I will say is that larger integrated network, which is going to be so essential for modern warfare in the years ahead, and how we defend and protect those aircraft with a layered approach.

Mr. WITTMAN. Very good.

Secretary ROPER. Congressman, one thing I would certainly invite you and any member of the committee to do is to go see the KC-135s being maintained out of Tinker and see the professional workforce that we have that are keeping those planes flying.

One thing that we are very excited about as we start moving from reactive maintenance to predictive maintenance, so similar to we all get our oil changed before our car breaks down, we have seen significant benefit on C-5 and B-1, so predicting issues before

they occur. We are very excited about bringing this technology into our tanker fleet, so that as we get—as these things get older, we start being able to forecast things before we have an unscheduled maintenance event.

Mr. WITTMAN. Listen, KC-135 is a great aircraft, great maintenance crews there, but you know, we talk about the B-52 being old, KC-135, some of these aircrafts are even older, so there is a whole element there in modernizing and keeping them maintained. And at some point, even the miraculous work our airmen do, you know, when something is old, it is old and you can't get past the old in being able to maintain.

Secretary ROPER. If the Air Force was the hospital ward, we definitely would have pediatrics through geriatrics.

Mr. WITTMAN. Yes, there would be a lot of—a lot of patients in ICU [intensive care unit], so anyway. Yes. Dr. Roper, I wanted to ask another question, too. There have been issues with the KC-46A, and as you know there are several Category 1 deficiencies that are still ongoing, both the camera and the boom. Can you give us a little more definition about what is being done to address those deficiencies?

Specifically with the camera, we understand that initially it was a software issue and then it was potentially a wiring issue. The things that I understand is there may be an issue with the physical limitations of the acuity of the camera in order to be able to take an incident light situation, be able to control that light to give a clear image to the operator. The same with the boom and it not responding well to a lighter aircraft like the A-10, because of the tensioning and the recoil on the boom.

Can you, first of all, give us what is the course of corrective action? And what is the timeframes involved in that? Because I think time is critically important there.

And then there appears to be on both sides a difference in where the liability rests and who will pay for the changes that are necessary in order for those—both those deficiencies to meet requirements. Can you give us a little more definition on that?

Secretary ROPER. Congressman, I am happy to do that. I will try to be brief as this is a complicated issue, so I would certainly offer to the committee or any individual member if you would like a briefing on the remote visual system [RVS] or the boom, I am happy to bring it by. It is quite interesting, but pretty dense and technical.

The boom is easier. Let me focus on that. Boeing designed to the international standard 7191, which is common throughout tankers in the world. Subsequently, we have discovered that planes like the A-10 need a much lower load on that boom. So it is 1,400 pounds, is the loading on a 7191 standard. We need 600 for the A-10. That constitutes a requirements change. It is the first one we have had in the tanker since inception.

So, we, the Air Force, are liable for implementing them. It is straightforward. It is an actuator change and we are already working with Boeing on cutting that into the line, hopefully in Lot 7.

The RVS is much more complicated, and Boeing is responsible for it and all other deficiencies on the airplane, both found previously and during IOT&E [initial operational test and evaluation].

The issue is a design flaw. When I was with this committee last year, we were looking at pictures from testing and saying, This is not acceptable. Boeing, bring us another design. They would bring us another design and we had no ability to know whether it would be acceptable or not. We had no ability to know whether we could accept the airplane and confidently tell the warfighter that that fix would bring the RVS up to snuff.

Since then, we started a Tiger Team, because we found we have tremendous experts in the Air Force on remote visual systems and humans interacting with screens. We were able to shift from looking at pictures to deriving nine critical performance parameters. These are very obscure things that take time to explain, like divergence, depth plane compression, depth plane curvature, which help us understand the math of an RVS, and Boeing committed to bring the RVS up to those specifications that we derived.

So they are responsible for doing that no matter what it costs, and we are currently working with them on design options that we will be able to measure in our laboratory before we take them out and install them on the plane.

If you are interested in coming out to Wright-Patt to AFRL, we can take you through our RVS laboratory and introduce you to the scientists who are really driving the design.

So in summary—in summary, Congressman, we really have shifted from being in the passenger seat on RVS to being in the driver's seat. The Air Force has more technical expertise on the RVS than industry does right now. So I am confident that we have the expertise to get to good; now we have to back it up.

Mr. WITTMAN. Now, are the timeframes being reflected in this corrective path accurate when the assessment is about 2 years to do the testing and development to get to the final agreed technical fix for RVS, and then 4 years to completely reinstall it on existing aircraft that are coming through the production line and to make changes on current production line? Is that 6-year window, that assessment, is that about correct?

Secretary ROPER. It is for both, Congressman, it should be 3 to 4 years to completely design, implement, and retrofit. That is the downside. When I reached that conclusion with Boeing and had the agreement in a legally binding memorandum of agreement, so Boeing has to meet those standards contractually, then it really became a choice for the warfighter. Do they want the tanker in Boeing's hands while we are waiting for these fixes to be implemented? Or do we want it in their hands? And overwhelmingly, from the command, they wanted the tanker in their hands while we wait for this fix to be done.

Of the nine things that have to be done on RVS, five are pretty straightforward and can be done via software mods; it is pixel remapping, things that can be done to fix the obscure angles that the RVS shows via software. Four are likely to take hardware. These will be harder, more difficult, and likely more costly. That is what we are working on with Boeing.

But I would certainly turn over to General Fay to talk about why would the operator want this tanker with its deficiencies in their hands while we wait for these fixes?

Mr. WITTMAN. Listen, I understand that. I am not debating that it shouldn't be in the hands of the airmen and obviously we need that. What my element is, is I want some specific definition about the time to completion on corrective action for aircraft being delivered and for those aircraft that are then on the production line coming back out to fully meet the requirements.

So can you give me a date or a timeframe definitive about when that will be completed so that all existing aircraft are compliant and aircraft coming off the production are now compliant?

Secretary ROPER. For the boom, Congressman, I am confident that we should be able to do that in about 3 years. We are hoping to have the mod done in time to cut into Lot 7. Then it is the choice for the commander about how they want to retrofit, bringing the airplanes into the depot or doing it in the field.

For the RVS, we are still doing the design with Boeing, so we have another 2 months until we lock down on the design. Depending on the number of hardware changes, it will determine how long it takes, and so I will take it will be an extended question for the record. But after we have locked down on the design, I will send a report to this committee on how long it will take to do the retrofit.

[The information referred to can be found in the Appendix on page 61.]

Mr. WITTMAN. Very good. I will do that and in the interest of time, I, too, would like for you to take a question for the record to give us some more definition, too, about the B-52 re-engining program. You heard Mr. Cisneros talk about depending on the aircraft for the longest period of time of all our existing bomber fleet. The key is, is what are we going to do in re-engining that aircraft? Especially making sure that we don't generate excessive concurrency with development, design, and integration.

So I want to get an idea on that because that aircraft is going to stay around. It is those elements as well as avionics and other modernization that is going to have to take it into the next 30-plus years.

Secretary ROPER. Congressman, I would be happy to take that for the record, and I can assure you the B-52 re-engining program has one of the most clever and creative acquisition plans in our portfolio. I would be delighted to share what they are doing that I think is smart and will set a standard for other programs. We will take that for the record.

[The information referred to can be found in the Appendix on page 61.]

Mr. WITTMAN. I think that is key and I want to make sure, too, that we are keeping in mind because we talk about time all the time, and you pointed it out as a key element of this, is to be able to eliminate that con—well, actually make sure that we are doing things in unison, so you are not, as you said, doing it in a waterfall approach, that you are doing things concurrently, so we are doing integration and design as we go, so timeframes are compressed so we are able to get this into the B-52 and modernize much more quickly than we would otherwise.

Secretary ROPER. Mr. Chairman, would you allow me a 30-second answer to that? Thank you, sir. The big picture thing we are doing

is a two-phase award. We are using the section 804 authority—again, thank you for that—to be able to put the vendor for the engines so we know who they are on an other transaction agreement so they can begin working with Boeing who owns the aircraft.

We don't want to award just based on the engine; we want to know if the engine can be integrated on the airplane. So we will have one round of evaluation based on the engine itself. They will turn over their digital twin to us as part of the competition, which will be great for the Air Force. We will determine what fuel efficiency it should give us. But the second round that we will do for the real source selection will be the engine airplane integration.

I think that will pull down the risk of not discovering something in this program and giving the warfighter what they need. The fuel efficiency really matters as an acquisition person—that is saving money—but fuel efficiency is range for the operator, so we are going to get that program right, Congressman.

Mr. COURTNEY. Great.

Thank you, Mr. Wittman. Actually—and one last question is, reading the testimony on the B-1 and the B-2, and again in past years, you know, we have gotten signals from the Air Force that the B-2 is going to be retired and then—so the testimony sort of just suggests that there is going to be almost sort of continued investment in both programs.

Can you just state for the record what the—is there a sequence now that the Air Force is looking at in terms of retirements with either one of those two platforms?

General FAY. Mr. Chairman, I will take that one.

Right now, the Air Force—what I would say we are doing, sir, is we are evaluating smartly as we are moving towards this—because this is a number of years in the future, we are assessing very carefully the security environment, the progress of the B-21, the status of both the B-2 and the B-1 and the B-52 aircraft as we move forward, and we are trying to make smart investments with all those factors in mind.

So the short answer, sir, is no. Certainly, we plan and we plan and we plan again—that is what we do in the military—so to say right now that I can tell you with certainty that we know exactly when we are going to do with what airplanes and in what order, I think we would likely be coming back to this committee in 6 months or 12 months when something changes in the security environment and the maintenance of the airplanes or in some other factor and we would probably have to revisit that.

But I think the final decision will be the operational capacity of the B-21. And when those commanders, both at Strategic Command and other combatant commanders, are able to look at General Ray, the Global Strike Command commander, he can assure them he can meet their mission needs.

Secretary ROPER. Mr. Chairman, I think we are making the prudent investments to modernize along with our other systems so the connectivity of these systems, being able to use different waveforms, having ADS-B [Automatic Dependent Surveillance-Broadcast] Out, things of this nature, what we are doing broadly are things that we are investigating as modernization options.

For programs like the B-2, we have to keep the ability to penetrate. We can't take risk there until the B-21 fields. That is why there is a major modernization effort.

When you go to the B-52, there are multiple major modernization efforts—the radar, the avionics, the commercial re-engine—so in the hospital analogy, this is like a major knee replacement or hip replacement. So we are definitely getting that airplane back up to where it is going to be in the fight.

So I agree with my colleague here. The B-21 is likely to set the pace. If we stay on path, then it will let us start making choices about the bomber fleet. But until we are there, given how complicated the program is and the fact that we had the A-Team on it, we really have to make sure that the warfighters aren't taking risk of a complicated development.

So I think this is a question we will have every year until we get the B-21 where we can say we know we are going to deliver on time, and right now, we are on a path to do that.

Mr. COURTNEY. Well, I want to thank both the witnesses and, again, working with us on the floor votes. And again, as the questions indicate, this dialogue will continue in the future. And with that, I will call the hearing closed.

[Whereupon, at 11:30 a.m., the subcommittee was adjourned.]

A P P E N D I X

MARCH 14, 2019

PREPARED STATEMENTS SUBMITTED FOR THE RECORD

MARCH 14, 2019

Opening Statement
Chairman Joe Courtney
“Department of the Air Force Fiscal Year 2020 Budget Request for Seapower
and Projection Forces”
March 14, 2019

This morning, the Seapower and Projection Forces Subcommittee meets to review the Air Force projection forces aspects of our subcommittee’s jurisdiction and the department’s Fiscal Year 2020 budget submission.

Winston Churchill once noted before the House of Commons that “Not to have an adequate air force in the present state of the world is to compromise the foundations of national freedom and independence.” As then, our Air Force bomber, tanker, and airlift platforms are critical to our national defense strategy and our ability to project power around the world.

But in comparison to the relatively active turnover elsewhere in the Air Force and even the Navy fleet, our Air Force projection forces are very much a stable entity. To a greater extent than in most areas of our national defense, the projection forces we have today will be the projection forces we may call upon in a conflict a decade from now. And yet, there are a number of challenges in assuring our continued capability in this realm. We do not have an active effort to recapitalize our strategic lift aircraft. The B-21 Raider program, while on track, is still many years from being fielded in significant numbers to recapitalize the bomber fleet. And the while the Air Force was finally able to accept its first KC-46 in 2019, significant deficiencies will remain in every aircraft the Air Force accepts this year and just last week, new issues arose requiring pause in acceptance of new aircraft.

All of this underscores the importance that this committee ascribes to keeping procurement programs on track and to the maintenance of our existing platforms. We will continue to closely scrutinize and provide input on the budgets presented to us. As I have done in previous hearings, I would like to highlight for members a few key areas where this subcommittee has had significant input on the Administration's budgeted plans for projection forces.

Last year, the Air Force planned to begin retirement of KC-10 tanker aircraft in anticipation of KC-46 aircraft being accepted. As we have seen in the last year, however, there is little reason to begin retiring aircraft when the replacements continue to suffer from technical deficiencies. Therefore, this subcommittee included language in the NDAA which was eventually signed into law which prohibits KC-10 retirements until the Air Force first meets its requirement 479 tanker aircraft.

Last year, the Air Force announced plans to make significant investments in the existing Air Force One aircraft despite the procurement of new aircraft planned to begin flying the next president in 2024. Members may recall this included a plan to spend a full \$24 million on just two refrigerators. In response, in addition to the

good work of the subcommittee to convince Air Force leadership to take a different approach on the refrigerators, we also set a firm retirement date in the FY19 NDAA for the existing Air Force One aircraft, the effect of which will limit similar wasteful procurements as the planes reach retirement.

And finally, this year's Air Force budget will continue to rely on congressional adds for propulsion modifications to the C-130H fleet, including the eight aircraft flown by Connecticut's 103rd Airlift Wing, the "Flying Yankees". Returning members of the subcommittee may recall the hearing we held last fall on deadly mishaps in our intra-theater airlift fleet. Since that hearing, we have received the final report showing that a legacy propeller was responsible for a 2017 tragedy which killed 17 servicemembers. And just last month, the Air Force grounded sixty C-130H aircraft, including six of the eight aircraft in the 103rd Airlift Wing, due to safety concerns with the same propeller system. I believe it is far past time for Air Force acquisition leadership to recognize that our C-130H fleet has a safety issue that requires real and urgent investment in a readily available alternative propeller. I look forward to delving into this issue later in the hearing.

I want to thank again our witnesses for their testimony and I will now yield to the Ranking Member for any opening remarks.

**Opening Remarks of the Honorable Robert J. Wittman
for the
Seapower and Projection Forces Hearing on
Department of the Air Force Fiscal Year 2020 Budget Request for Seapower
and Projection Forces
March 14, 2019**

I thank the gentleman for yielding, and I want to thank Dr. Roper and Lieutenant General Fay for participating in our first fiscal year 2020 budget hearing.

Last year, the administration prepared a new National Defense Strategy that accentuated great powers competition and indicated that the new strategy would be incorporated into the fiscal year 2020 budget request. In many areas, this is true. We have seen a significant effort to accelerate hypersonics, a continued focus on the new B-21 bomber, and the development of advanced weapons. However, with every step forward, we continue to take a step back and avoid fully embracing the full weight of great powers competition—a move that will undoubtedly, unexpectedly, and eventually hamstring us at some critical juncture in the future.

For example, we continue to exhibit significant shortfalls in our tanker force structure; we continue to lack progress in bomber modernization; and we continue to lack basic mobility capabilities necessary to operate in a contested environment. I am convinced that today's air forces are optimized to operate in a benign environment and that any major change to our current operations will take years to implement and a steady, willing hand to for them fully embrace the basic tenets of our new National Defense Strategy—simply put, our Air Force must evolve.

An example of this missing evolution is the KC-135—the backbone of our tanker force structure— a capability that at first glance checks out, yet a deeper look shows its ability to operate in a contested environment is particularly lacking. We need to significantly modernize this long-term tanker asset to include basic connectivity, radar warning, and active countermeasures. We need to ensure that the deep penetrating strike bombers have sufficient defensive countermeasure capabilities to operate in a contested and conflicted environment. We need to explore other options as to how we deliver long range fires at range. Unfortunately, the fiscal year 2020 budget request does little to forward these critical mission areas.

In addition to great powers competition, I think that we need to review certain acquisition programs to include the KC-46A tanker and the B-52 reengining program. As to KC-46A, this has been a tortured program that is just now starting to deliver. I understand that the Air Force has started, then stopped, and started again—earlier this week—accepting aircraft that require additional hardware modifications to the primary tanking mission area. I think that the Air Force did a good job at initially holding the line and requiring strict compliance with the tanker specification. However, when push came to shove, the Air Force

decided to accept deficient aircraft, and in some cases, accept the financial liability to fix certain deficient components. And, while I'm glad that these planes have been delivered, maybe the lesson learned in this acquisition program is that fixed price development on even relatively uncomplicated acquisitions is not the correct tool to realize warfighting capabilities. I look forward to better understanding how fixed price development contracts deliver specification requirements.

As to the B-52 reengining program, I am pleased to see industry respond to Air Force request for information with engines that will ensure the B-52 aircraft can be retained in the long term and at reduced cost. However, I remain concerned about the use of a rapid prototyping authority for what is a long-term integration challenge. I think that we need to closely examine the appropriate application of these accelerated authorities and the implications of shortcuts associated with the current federal acquisition regulations. I have seen a multitude of defense programs suffer from significant concurrency of design and development, and I fear that we may be embarking on a similar path for this B-52 reengining program.

All that being said, I continue to be impressed with the leadership of the Air Force acquisition team. If the Air Force can more adequately embrace the change directed in the national defense strategy, I believe that our Air Forces will be more effective, lethal, and survivable in a true great powers competition.

I thank the Chairman for organizing this important hearing and I yield the balance of my time.

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UNITED STATES HOUSE OF REPRESENTATIVES

PRESENTATION TO THE
HOUSE ARMED SERVICES COMMITTEE
SUBCOMMITTEE ON SEAPOWER AND PROJECTION FORCES
UNITED STATES HOUSE OF REPRESENTATIVES

HEARING DATE/TIME: March 14, 2019, 10:00 AM

SUBJECT: Air Force, Force Structure and Modernization

STATEMENT OF:

Dr. William B. Roper, Jr.
Assistant Secretary of the Air Force
(Acquisition, Technology & Logistics)

Lt. Gen. Timothy G. Fay, USAF
Deputy Chief of Staff
(Strategy, Integration and Requirements)

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SUBCOMMITTEE ON SEAPOWER AND PROJECTION FORCES
UNITED STATES HOUSE OF REPRESENTATIVES

INTRODUCTION

Chairman Courtney, Ranking Member Wittman and distinguished members of the subcommittee, thank you for having us here today to provide testimony on Air Force modernization. Additionally, thank you for your leadership and dedication to rebuilding the United States military. The modernization of America's Air Force is a critical national security issue worthy of attention and action.

Today's security environment is perhaps one of the most challenging we've faced as an Air Force when you consider the scale and scope of what our Nation demands of us. We face challenges in and across all domains in which the Air Force operates. Our ability to compete, deter, and win are being challenged by others. We are in global competition across the spectrum of potential operations, ranging from countering malign influence in gray zones all the way to deterring nuclear war. Others have made gains, and we cannot allow any gap between national security demands, and the resources provided to meet more demands to grow while continuing to operate at a pace that challenges readiness.

Thanks to your help, in recent years, together we have made solid gains in improving wartime readiness and returning some fiscal stability, but there remains work to be done, particularly in the area of modernization and force structure capacity; and our warfighting capability. The dialogue we have today will help us as we design and build a better future Air Force worthy of tomorrow's Airmen and our Nation.

STRATEGIC ENVIRONMENT

The National Defense Strategy captures the national security challenges we face as a Nation. The United States faces an increasingly complex global security environment, characterized by overt challenges to the free and open international order and characterized by

long-term, strategic competition. A rapidly growing China and resurgent Russia aim to coerce their regional neighbors, undermine long-standing alliances, and displace American influence from critical regions around the globe. North Korea remains a regional actor requiring vigilance as long as it possesses destabilizing capabilities. Iran's ambitions in the Middle East are paired with a willingness to undermine American allies' sense of security and regional stability. And lastly violent extremist organizations still possesses the will to target the innocent.

Our United States Air Force must be ready to compete, deter, and win in this complex and evolving security environment. We must defend the homeland; provide a safe, secure, and effective nuclear deterrent; and be able to defeat a powerful conventional enemy while we deter opportunistic aggression in another theater, and continue to disrupt violent extremists.

All of this drives how we design and modernize our forces. As the bipartisan National Defense Strategy Commission (NDSC) stated in its final report, "The United States needs a larger force than it has today if it is to meet the objectives of the strategy. The Air Force, Navy, and Army will all need capacity enhancements." Additionally, the same report acknowledges that the, "Air Force will need more stealthy long-range fighters and bombers, tankers, lift capacity, and intelligence, surveillance, and reconnaissance platforms."

CURRENT CAPACITY AND CAPABILITY

Our analysis aligns with the conclusions of the NDSC. When we assessed the operational plans and scenarios, we validated that the Air Force We Need to meet the demands of the National Defense Strategy needs to grow from 312 to 386 operational squadrons, about a 25% increase. In our estimation, this would permit us to execute the National Defense Strategy with moderate risk. Just to be clear, this was a pure strategy-based analysis – not a budget one – and it took a detailed look at the entirety of Air Force force structure. This analysis has not been

independently validated or endorsed by the Department of Defense, but it provides the Air Force with information about how we can shape our investments to best support the NDS.

Bomber Force Structure

We must continue to modernize and sustain the legacy bomber fleets to ensure they remain viable and capable until we transition to the B-21. Our budget proposal supports the Defense Department's principal priority to maintain a safe, secure, and effective nuclear deterrent that safeguards the homeland, assures allies, and deters adversaries.

B-21

The National Defense Strategy provided strategic direction to develop a new stealth bomber, and the B-21 Raider is the answer. The B-21 has a mature and stable design and is transitioning to development of the first test aircraft. The FY20 funding requests \$3.0 billion, \$20 billion across the FYDP, to continue Engineering Manufacturing and Development to progress towards fielding this fleet.

The B-21 will be a highly survivable asset with the ability to penetrate modern air defenses to accomplish mission objectives in an anti-access/area denial environment. We will need a minimum of 100 B-21s in our inventory. We are also pursuing legacy bomber fleet upgrades in order to keep those assets sustainable and viable, which is necessary until the B-21 becomes operational in sufficient numbers.

B-52

The last B-52H Stratofortress entered service in the United States Air Force in 1962, we expect to continue operating the B-52 through 2050 and will continue to invest in modernization programs to keep the platform operationally relevant. Major modernization efforts include the Commercial Engine Replacement Program, \$1.4 billion across the FYDP; Radar Modernization

Program, \$1.1 billion across the FYDP; and Combat Network Communications Technology, \$74 million across the FYDP. The B-52 Commercial Engine Replacement Program will replace legacy engines with new commercial engines using Section 804 processes to remove more than three years from the traditional program schedule. The Radar Modernization Program will modernize the current Strategic Radar (AN/APQ- 166), which is based on 1960s technology and was last modified in the 1980s.

B-52 Combat Network Communications Technology (CONNECT) provides an integrated communication and mission management system, as well as a machine-to-machine interface for weapons retargeting. CONNECT's digital infrastructure and architecture provides the backbone for the 1760 Internal Weapons Bay Upgrade, which allows for internal carriage of J-series weapons through modification of the Common Strategic Rotary Launchers, thus significantly increasing the B-52's capability to store and deliver the Joint Direct Attack Munition (JDAM), Laser-JDAM, Joint Air-to-Surface Standoff Missile (JASSM) and its extended range variant, and the Miniature Air Launched Decoy (MALD) along with its jamming variant. Finally, the integration of the long-range standoff (LRSO) nuclear air-launched cruise missile will ensure the continuation of the B-52's role in the airborne leg of the Nuclear Triad. The Air Force remains committed to B-52 modernization to ensure the nation's oldest and most versatile frontline long range bomber remains relevant through at least 2050.

B-1

The B-1B is a long-range, air-refuelable multirole bomber capable of flying intercontinental missions with the largest payload of guided and unguided weapons in the Air Force inventory. We continue to invest in B-1 modernization and sustainment to ensure the platform remains lethal and viable through 2040. The Integrated Battle Station upgrade, \$60

million across the FYDP, will enhance crew situational awareness and precision engagement capabilities and is the B-1B's largest modernization effort ever. The first aircraft with this upgrade was delivered in January 2014, and a total of 50 B-1s are currently modified with this capability. This modernization effort will complete in 2020. Other efforts to update the B-1B's navigation and radar systems were completed in early 2016. These efforts improve the reliability and maintainability of these critical systems.

The B-1B was the Air Force threshold platform for early operational capability of the Long Range Anti-Ship Missile, which transitioned from a Defense Advanced Research Projects Agency (DARPA) demonstration to the Navy-led Offensive Anti-Surface Warfare Program. Integration of this weapon, coupled with the B-1B's long range, high speed and large payload capacity, will posture the B-1B for an important role in any conflict in the Indo-Pacific region.

B-2

The B-2 is the only long-range strike aircraft capable of penetrating and surviving advanced Integrated Air Defense Systems to deliver weapons against heavily defended targets. Its unique attributes of intercontinental range, precision strike, large conventional or nuclear payloads, ability to penetrate defenses, and low observable profile allow it to execute Nuclear Deterrence Operations, Nuclear Response, Global Strike, and Global Precision Attack missions. The Air Force will continue to modernize the B-2 to ensure it remains effective as enemy defensive systems advance. Current efforts to modernize the Defensive Management System, \$1.5 billion within the FYDP, will ensure the B-2 can continue to counter sophisticated air defense networks and operate in highly contested environments.

The Air Force has completed development efforts to re-host the Stores Management Operational Flight Program software in the Flexible Strike program, enabling the B-2 to take

advantage of advanced digital weapon interfaces, such as those used by the B61-12 nuclear weapon. The Flexible Strike capability will begin fielding this year as part of the B-2 P6.2 block effort, which includes Military GPS User Equipment and B-2 hardware to support carrying the B61-12 weapon. The Air Force began installing the Common Very-Low-Frequency / Low Frequency (VLF/LF) Receiver and will complete fielding the system in all twenty B-2 aircraft in FY2020. This program provides the B-2 with a VLF/LF receiver for secure, survivable strategic communications capability. Other on-going B-2 programs address modernization efforts with \$176M across the FYDP to enhance the Identification Friend or Foe (IFF) system, replace the Crash Survivable Memory Unit, and integrate hardware upgrades for the employment of the GBU-57 Massive Ordnance Penetrator, as well as the B61-12 nuclear weapon. The Radar Aided Targeting System software upgrade began development in October 2018 and will provide improved navigational handoff to weapons in a GPS-denied environment. Next year the Air Force will begin exploring modifications, \$23M within the FYDP, to the B-2 to enhance the aircraft's capability against hardened, deeply buried targets. And, finally, the B-2 will continue sustainment efforts, \$139M across the FYDP, for the on-going Low Observable Signature and Supportability Modification effort, to improve aircraft maintainability and availability.

Tanker Fleet

Tankers are the lifeblood of our joint force's ability to respond to crises and contingencies quickly and are essential to keeping our Air Force fueled as a global force. The tanker fleet is comprised of 396 KC-135s, 59 KC-10s, and 6 KC-46s that provide the backbone of rapid U.S. global operations. Delivery of 179 KC-46 Pegasus aircraft by 2028 will replace less than half of the current tanker fleet and leave the Air Force with 300 aging KC-135s awaiting recapitalization.

KC-46

While we continue to sustain the current tanker capability, building the future tanker fleet remains one of the Air Force's top acquisition priorities. The KC-46 will deliver greater operational readiness, flexibility, and survivability to the Global Reach mission. The Air Force awarded Lot 4 on 10 September 2018, increasing the number of production aircraft on contract to 52. Lot 5 (15 aircraft) is projected to award in July 2019.

The first four KC-46 aircraft were delivered to McConnell AFB, KS (Main Operating Base 1), 25-31 January 2019. Two additional KC-46s were delivered to Altus AFB, OK (Formal Training Unit), 8-9 February 2019. The Air Force will continue taking delivery of KC-46s over the next year at a rate of approximately 3 per month until the backlog of aircraft is exhausted, at which point the delivery rate will reduce to approximately 1.25 per month. The Air Force will begin Initial Operational Test and Evaluation (IOT&E) in Spring 2019.

Partnered with Air Mobility Command, we have worked hard to accept the KC-46 while ensuring its major deficiencies—the Remote Visual System (RVS) and boom—are properly addresses without undue burden on taxpayers or warfighters. We initiated a subject matter expert team that derived critical performance parameters for both the RVS and boom and codified these parameters in a legally-binding agreement with the vendor. Due to the extensive nature of the fixes, especially the RVS, both actions will take 3-4 years to implement and retrofit fully across our fleet. Consequently, our warfighters strongly desired the KC-46 in their hands, vice the vendor's, while these corrections are being implemented for training and readiness purposes. Despite its current deficiencies, the KC-46 is safe to operate (adhering to flight manual cautions we have provided to our operators) and is the Air Force's best tanker for contested environments due to enhanced situational awareness, battle management, and countermeasures.

The FY20 Budget requests \$59.6 million in RDT&E funding for the ongoing KC-46 Engineering and Manufacturing Development and post production modification efforts. Additionally, FY20 also has a request for \$2.2 billion in procurement funding to award Lot 6 (12 aircraft).

KC-10 and KC-135

The average age of our KC-135 and KC-10 tankers is 57 and 34 years old respectively. Both fleets are challenged by aircraft parts obsolescence and diminishing manufacturing source issues. However, with the help of organic Air Force depots and industry, we are able to maintain these platforms as effective and safe weapon systems for the warfighter. We are executing several key modernization, safety, and compliance initiatives to ensure our KC-135 fleet remains viable through at least 2045.

The FY20 Budget requests \$124.5 million to continue KC-135 modernization efforts. The Block 45 program addresses supportability, reliability, and maintainability issues with legacy flight and engine instruments by integrating a digital flight director, autopilot, radio altimeter, and electronic engine instrument display for our operators. Additionally, the Real Time in the Cockpit program provides real time situational and battlespace awareness to aircrews.

Furthermore, FY20 also requests \$13 million through the FYDP to keep our KC-10 fleet operational through its planned retirement and includes funding for service bulletins and low cost modifications to ensure Federal Aviation Administration (FAA) certification.

Presidential Airlift

VC-25B

The VC-25B program will replace the U.S. Air Force Presidential VC-25A fleet, which faces capability gaps, rising maintenance costs, and parts obsolescence as it ages beyond 30 years.

The VC-25B program will deliver two new aircraft to meet the requirements for the President to execute the three roles of Head of State, Chief Executive, and Commander-in-Chief. The Boeing 747-8 aircraft will be uniquely modified to provide the President, staff, and guests with safe and reliable air transportation with an equivalent level of communications capability and security available in the White House. The modifications to the 747-8 aircraft will include an electrical power upgrade, dual auxiliary power units that are usable in flight, a mission communication system, an executive interior, military avionics, a self-defense system, autonomous enplaning and deplaning, and autonomous baggage loading. The FY20 Budget request aligns funding with the Acquisition Program Baseline and requests \$757.9 million to continue Engineering and Manufacturing Development to design, modify, test, and field VC-25B aircraft by 2024, or sooner.

Other Presidential Airlift Modernization

C-32

The Air Force and Navy are engaged in a combined Analysis of Alternatives to recapitalize the National Military Command System fixed-wing airborne layer and large capacity Executive Airlift fleets. This study encompasses the E-4B National Airborne Operations Center, C-32A Executive Airlift, and E-6B Airborne Command Post/Take Charge and Move Out aircraft and missions. These platforms are aging and increasingly difficult to support. The study explores the realignment of missions amongst platforms and examines potential benefits of acquiring common airframes without sacrificing operational effectiveness or increasing overall costs. The Air Force and Navy expect to complete the effort in the December 2019 timeframe. C-32 Recapitalization is currently in the Materiel Solutions Analysis Phase and is not a formal acquisition program. The FY20 Budget requests \$9.93 million to complete the study, support the

Material Development Decision, begin Materiel Solution Analysis activities, and start Technology Maturation Risk Reduction activities.

C-37

The C-37 Fleet Expansion program purchases additional C-37 aircraft to fill approved Department of Defense operational requirements for executive airlift and resolve shortfalls created by C-20 aircraft retirements. The C-37 is a FAA certified commercial derivative of the Gulfstream GV/G550 twin-engine, long range, jet transport with executive interiors, a robust mission communications system, and self-defense systems to support the worldwide travel needs of the Vice President, Cabinet members, Combatant Commanders and Members of Congress. The FY20 Budget requests \$161 million for the purchase of two C-37 aircraft. The procurement will bring the number of C-37s purchased to a total of four aircraft and grow the fleet size to 16 aircraft by FY22.

Airlift

C-5

The C-5 Super Galaxy provides all-weather worldwide strategic airlift for combat forces, equipment, and supplies, exemplifying Rapid Global Mobility outlined in the National Defense Strategy. Current investment programs focus on fleet obsolescence, maintainability, and safety of flight.

The FY20 Budget requests \$73.6 million in procurement funding, predominately for C-5 core mission computer/weather radar system equipment. This system replaces an antiquated radar system with diminishing manufacturing sources and upgrades the core mission computer processor to meet the demands of future software modifications.

Additionally, FY20 Budget requests \$10.2 million in RDT&E funding to support communications, navigation, surveillance/air traffic management upgrades, including Automatic Dependent Surveillance-Broadcast (ADS-B) Out modifications required for global airspace compliance. Replacement of the Multi-function Control and Displays is a new start in FY20 also included in this RDT&E funding request.

C-17

The C-17 is the only aircraft in the Air Force inventory that combines tactical capability with strategic range to operate from austere airfields. The fleet of 222 aircraft provides our Nation unmatched flexibility to conduct theater and inter-theater direct delivery, airdrop, aeromedical, and special operations airlift missions. Agile and efficient software and hardware updates will ensure timely readiness, safety, and capability improvements as this premier airlift platform contributes to our national security objectives.

The FY20 Budget requests \$138 million in procurement funding to continue critical modifications to the C-17 fleet. This includes ADS-B Out to satisfy FAA and civil airspace compliance mandates, Identify Friend or Foe (IFF) for the identification and control of military aircraft, and Large Aircraft Infrared Countermeasures defensive systems. Additionally, \$25.1 million of FY20 RDT&E funding will address obsolescence and flight safety issues. The development of a replacement heads-up display will address obsolescence of the current C-17 heads-up display and improve the system's availability, reliability, and maintainability. The Beyond Line-of-Sight communication system effort modernizes multi-channel voice and data communication subsystems to ensure the C-17 keeps pace with changes in DoD communication infrastructure.

C-130

The C-130 fleet consists of legacy C-130H and C-130J aircraft, as well as special mission aircraft (AC/LC/EC/MC/HC/WC-130s). The C-130Hs and C-130Js are medium-size transport aircraft capable of completing a variety of tactical airlift operations across a broad range of missions. The fleet delivers air logistics support for all theater forces, including those involved in combat operations.

The Air Force continues to modernize the C-130H legacy fleet through a four-pronged approach emphasizing aircraft safety, airspace compliance, modernization, and partial recapitalization. We remain committed to ensuring C-130H aircraft remain safe to operate through efforts such as center wing box replacements. By replacing aging center-wing boxes, we are able to breathe new life into some of our hardest flown aircraft enabling them to continue to safely operate well into the future. The C-130H Avionics Modernization Program (AMP) Increment 1 ensures the legacy fleet is able to fly in international airspace by complying with 2020 U.S. and international airspace mandates. The AMP Increment 2 program is key to the modernization of the C-130H fleet. This program will improve the fleet's maintainability and reliability by providing a new digital avionics suite mitigating obsolescence and diminishing manufacturing source issues. The Air Force is also partially recapitalizing the legacy fleet with C-130Js. The FY20 PB requests \$140 million in RDT&E and \$52 million in procurement funding to support the legacy C-130H fleet.

Partial C-130H recapitalizing also supports our Air Force special operations forces. The newer C-130Js provide our special forces with the extra weight carrying capacity, longer range, and better fuel efficiency. These special mission variants of the C-130J conduct airborne psychological operations and offensive electronic warfare (EC-130J), weather reconnaissance (WC-130J), search and rescue (HC-130J), and special operations (MC-130J and AC-130J).

Along with purchasing new aircraft, the Air Force has multiple modification efforts for the C-130J to include center wing box replacement, large aircraft infrared countermeasures, and an accelerated avionics upgrade to meet 2020 international airspace mandates as part of the C-130J Block 8.1 upgrade. The C-130J Block 8.1 modernization program, currently in production, will begin delivering new communication and data link capabilities, a flight management system, and other key capabilities to the field. In addition, the Air Force plans to upgrade our C-130H and C-130J fleets with a Mobile User Objective System satellite communication system to ensure we can maintain key communication links anywhere in the world.

The FY20 Budget requests \$8.7 million for C-130J RDT&E and \$142 million for C-130J modification efforts. There is also a request for \$17.2 million for HC/MC-130J RDT&E and \$958 million for HC/MC-130J procurement and modification efforts.

FUTURE CAPABILITY

To compete against rising peer adversaries during this time of unprecedented commercial technology change requires a competitive acquisition system: one that is faster and more agile than all rivals'. Our analysis, including multiple war simulations, workshops and wargames, clearly shows we must adopt the latest technology and deliver capability faster to stay ahead in the near-peer fight.

To achieve our National Defense Strategy, *"the delivery of performance at the speed of relevance"* matters. We must design, build, integrate and field systems faster than any adversary. That is why we have taken full advantage of rapid acquisition authorities to accelerate our programs to maintain our cutting edge. Through authorities given to us by Congress, like section 804 and tailoring traditional acquisition approaches to match the program needs, we are trimming excess, non-statutory steps that have previously slowed programs down. As of the end

of February 2019, we have saved 78.5 years through the use of tailored acquisitions and Section 804 authorities. The initial goal of saving 100 years will be accomplished in less than one year of pursuit. As a result, we are getting better results and meeting warfighter needs faster. For instance, using section 804 authorities, the Air Force is leading the development of two air-launched hypersonic weapon rapid prototyping efforts: the Hypersonic Conventional Strike Capability and the Air Launched Rapid Response Weapon. Stripping a total of 10 years from these programs, we expect to demonstrate the Department's first operational flight test in 2020 and achieve early operational capability in 2021.

Another contributor to fielding tomorrow's Air Force faster is agile software development. With the establishment of the Program Executive Office Digital, Kessel Run and Kobayashi Maru software factories, and Software Engineering Squadrons, we are scaling the successes of recent pathfinders to implement modern commercial software development practices across the Air Force to speed delivery and close cyber vulnerabilities more rapidly. Major programs like F-22, Unified Platform, and Protected Tactical Enterprise System are reaping the benefits as they shift to Agile Development Operations, accelerating delivery to the warfighter by over seven years.

Faster acquisitions go hand-in-hand with smarter ones. One area where we are applying innovative thinking is in the area of sustainment. The new Air Force Rapid Sustainment Office has Program Executive Office authorities to drive innovation in sustainment programs, lower cost and improve readiness. The office is developing, transitioning and training Air Force maintainers to use technologies found in commercial manufacturing. Technological advances such as artificial intelligence, robotics and 3-D printing are being incorporated into our labs to lower costs and speed-up repairs for our warfighters. To date, the Air Force has certified broad

swaths of metal and plastic additively manufactured parts, cold spray repair at our depots in Tinker and Robbins AFB, and over 140 predictive maintenance algorithms, saving cost while increasing readiness.

Other smart practices center around the industrial base, both growing it and getting performance out of it. Over the past year, the Air Force saved the taxpayer over \$15 billion through competitively awarding major contracts. We are committed to getting the most out of competition through maintaining stable requirements and remaining transparent with industry. We are also using new authorities, including Section 804, for competitive prototyping in major space programs like Launch Services Agreements, Next Generation Overhead Persistent Infrared, Enhanced Strategic SATCOM, and Protected Tactical SATCOM to expand our space industrial base while lowering risk to the overall program. Without the Rapid Acquisition Authorities there would still be a half-century worth of unnecessary time in 20 of our programs that are using the new authorities in Section 804 to develop and field faster. Additionally, we appreciate the delegation of Milestone Decision Authority to the Service Acquisition Executive; we have subsequently delegated all medium and small programs to the field, increasing overall decision-making capacity and speed. Because of Congressional action, we can focus on performance-rather than process-in our rapid capability development efforts. Robust experimentation and prototyping are also enabling the Air force to develop disruptive technologies to retain our cutting edge while we sharpening industry's. New organizations, such as the Air Force Warfighting Integration Center, AFWERX, and the Strategic Development Planning and Experimentation Office, are providing new ideas and tools to increase overall speed of idea to pathfinder to program.

Outside of the Defense Industrial Base, we know many innovative ideas are being birthed in U.S. startup companies and that we are largely missing out on them. In order to break down barriers for small businesses who want to work on our toughest challenges, we have created an innovative new contracting approach. Using a one-page contract and a small-dollar contracting mechanism that can “pay-in-a-day”, we invited small businesses to pitch their ideas to the Air Force on March 6th and 7th. Based on the success, we plan to repeat Pitch Days to increase Air Force access to a broader demographic of small disruptive companies revolutionizing U.S. and global technology industries.

We want to give credit and thanks to Congress. Without the Rapid Acquisition Authorities there would still be a half-century worth of unnecessary time in 20 of our programs that are using the new authorities in Section 804 to develop and field faster. Additionally, we appreciate the delegation of Milestone Decision Authority to the Service Acquisition Executive; we have subsequently delegated all medium and small programs to the field, increasing overall decision-making capacity and speed. Because of Congressional action, we can focus on performance—rather than process—in our rapid capability development efforts.

We have many other initiatives that will commence later this year, all centered speeding our process to remain competitive for tomorrow’s Airmen as we remain dominant for today’s. There will be no silver medal for building the world’s second-best Air Force. We hope the steps we have taken with the authorities you have given us demonstrate that we do not intend to.

Dr. Will Roper
Assistant Secretary of the Air Force for Acquisition, Technology and Logistics

Dr. Will Roper is the Assistant Secretary of the Air Force for Acquisition, Technology and Logistics. As the Air Force's Service Acquisition Executive, Dr. Roper is responsible for and oversees Air Force research, development and acquisition activities totaling an annual budget in excess of \$40 billion for more than 465 acquisition programs. In this position, Dr. Roper serves as the principal advisor to the Secretary and Chief of Staff of the Air Force for research and development, test, production and modernization efforts within the Air Force. In addition to his Air Force responsibilities, Dr. Roper is the Service Acquisition Executive for the Joint Strike Fighter.

Prior to his current position, Dr. Roper was the founding Director of the Pentagon's Strategic Capabilities Office. Established in 2012, the SCO imagines new—often unexpected and game-changing—uses of existing government and commercial systems: extending their shelf-life and restoring surprise to the military's playbook. Since 2012, SCO has grown from an annual budget of \$50 million to the current \$1.5 billion request in the President's 2018 budget with projects spanning new concepts such as hypervelocity artillery, multi-purpose missiles, autonomous fast-boats, smartphone-navigating weapons, big-data-enabled sensing, 3D-printed systems, standoff arsenal planes, fighter avatars and fighter-dispersed swarming micro-drones which formed the world's then-largest swarm of 103 systems. During his tenure as SCO Director, Dr. Roper served on the Department's 2018 National Defense Strategy Steering Group, Cloud Executive Steering Group and Defense Modernization Team.

Previously, Dr. Roper served as the Acting Chief Architect at the Missile Defense Agency where he developed 11 new systems, including the current European Defense architecture, advanced drones, and classified programs. Before this, he worked at MIT Lincoln Laboratory and served as a missile defense advisor to the Under Secretary of Defense for Acquisition, Technology and Logistics.

EDUCATION

2001 Bachelor of Science in Physics, Georgia Institute of Technology, Atlanta
 2002 Master of Science in Physics, Georgia Institute of Technology, Atlanta
 2010 Doctorate in Mathematics, Oxford University, England

CAREER CHRONOLOGY

January 2006 – June 2010, Missile Defense Advisor, MIT Lincoln Laboratory, Washington, D.C.
 August 2010 – August 2011, Member, Missile Defense Advisory Committee, Missile Defense Agency, Washington D.C.
 June 2010 – August 2012, Acting Chief Architect, Missile Defense Agency, Washington D.C.
 August 2012 – February 2018, Director, Strategic Capabilities Office, Office of the Secretary of Defense, Washington, D.C.
 February 2018 – present, Assistant Secretary of the Air Force for Acquisitions, Technology and Logistics, Headquarters U.S. Air Force, Washington, D.C.

MAJOR AWARDS AND HONORS

Department of Defense Medal for Distinguished Public Service
 Secretary of Defense's Award for Excellence
 USD/AT&L Award for Innovation
 MDA Contractor of the Year
 MDA Innovation and Technology Awards
 Rhodes Scholar

(Current as of March 2018)

Lieutenant General Timothy G. Fay
Deputy Chief of Staff for Strategy, Integration and Requirements

Lt. Gen. Timothy G. Fay is the Deputy Chief of Staff for Strategy, Integration and Requirements, Headquarters U.S. Air Force, Washington, D.C. General Fay is responsible to the Secretary and Chief of Staff of the Air Force for developing the Air Force strategy and multi-domain operating concepts, integrating through centralized design, and validating and prioritizing operational capabilities-based requirements to achieve national defense objectives and deliver timely and effective capability to the warfighter.

General Fay was commissioned following his graduation from the U.S. Air Force Academy in 1987. His previous assignments include instructor pilot and weapons officer duties in the B-52 and B-2, and staff service at Headquarters, U.S. Strategic Command, U.S. Forces Iraq, Joint Staff and the Air Staff. He served in operations Desert Storm, Allied Force and Iraqi Freedom, commanded at the squadron, group and wing level and is a command pilot with more than 3,900 flight hours. In his previous assignment, he served as the Deputy Commander, U.S. Air Forces in Europe-Air Forces Africa, Ramstein Air Base, Germany.

EDUCATION

1987 Bachelor of Science, U.S. Air Force Academy, Colorado Springs, Colo.
 1996 Weapons Instructor Course, U.S. Air Force Weapons School, Nellis Air Force Base, Nev.
 1998 Master of International Relations, University of Belgrano, Buenos Aires, Argentina
 2002 Master of Military Operational Arts and Sciences, Air Command and Staff College, Montgomery, Ala.
 2005 Master of National Security Strategy, National War College, Fort Lesley J. McNair, Washington, D.C.

ASSIGNMENTS

July 1987 - September 1988, undergraduate pilot training, Williams AFB, Ariz.
 Nov 1988 - June 1992, B-52 Pilot, 596th Bomb Squadron, Barksdale AFB, La.
 June 1992 - May 1994, B-52 Pilot, Aircraft Commander, 34th Bomb Squadron, Castle AFB, Calif.
 May 1994 - June 1996, B-52 Instructor Pilot, 23rd Bomb Squadron, Minot AFB, N.D.
 June 1996 - December 1996, Defense Language Institute, Presidio of Monterey, Calif.
 January 1997 - November 1998, Olmsted Scholar, University of Belgrano, Buenos Aires, Argentina
 November 1998 - August 2001, B-2 Instructor Pilot, Wing Weapons Officer, 509th Operations Support Squadron and 325th Bomb Squadron, Whiteman AFB, Mo.
 August 2001 - June 2002, Air Command and Staff College, Maxwell AFB, Ala.
 June 2002 - June 2004, Commander, 65th Operations Support Squadron, Lajes Field, Portugal
 June 2004 - June 2005, National War College, Fort Lesley J. McNair, Washington, D.C.
 June 2005 - July 2006, Deputy Commander, 5th Operations Group, Minot AFB, N.D.
 July 2006 - November 2007, Headquarters, U.S. Strategic Command, Omaha, Neb.
 November 2007 - April 2009, Commander, 2nd Operations Group, Barksdale AFB, La.
 April 2009 - April 2010, Director, Strategic Communications Division, USF-I J-9, Baghdad
 July 2010 - May 2012, Commander, 2nd Bomb Wing, Barksdale AFB, La.
 May 2012 - March 2014, Vice Deputy Director J33 and Deputy Director J36 Joint Staff, the Pentagon, Washington, D.C.
 March 2014 - October 2014, Director, Operational Planning, Policy and Strategy, Office of the Deputy Chief of Staff for Operations, Plans and Requirements, Headquarters U.S. Air Force, Washington, D.C.
 October 2014 - May 2015 Deputy Director, Current Operations, Office of the Deputy Chief of Staff for Operations, Headquarters U.S. Air Force, Washington, D.C.
 May 2015 - January 2017, Director of Strategic Plans, Office of the Deputy Chief of Staff for Strategic Plans and Requirements, Headquarters U.S. Air Force, Washington, D.C.
 January 2017 - June 2017, Director of Operations, Strategic Deterrence, and Nuclear Integration, Headquarters U.S. Air Forces in Europe, Ramstein AB, Germany

June 2017 - August 2018, Deputy Commander, U.S. Air Forces in Europe-Air Forces Africa, Ramstein AB, Germany
August 2018 – October 2018, Special Assistant to the Vice Chief of Staff of the U.S. Air Force, the Pentagon, Arlington, Va.
October 2018 - Present, Deputy Chief of Staff for Strategy, Integration and Requirements, Headquarters U.S. Air Force, Washington, D.C.

SUMMARY OF JOINT ASSIGNMENTS

July 2006 - November 2007, Chief, Innovation Group then Deputy Director, Global Innovation and Strategy Center, Headquarters, U.S. Strategic Command, Omaha, Neb., as a lieutenant colonel
April 2009 - April 2010, Director, Strategic Communications Division, USF-I J-9, Baghdad, as a colonel
May 2012 – March 2014, Vice Deputy Director J33 and Deputy Director J36 Joint Staff, the Pentagon, Washington, D.C., as a brigadier general

FLIGHT INFORMATION

Rating: Command pilot
Flight hours: More than 3,900
Aircraft flown: B-52, B-2, T-38 and T-37

MAJOR AWARDS AND DECORATIONS

Air Force Distinguished Service Medal
Defense Superior Service Medal
Legion of Merit
Bronze Star Medal
Defense Meritorious Service Medal
Meritorious Service Medal with four oak leaf clusters
Air Medal
Air Force Commendation Medal

EFFECTIVE DATES OF PROMOTION

Second Lieutenant May 1987
First Lieutenant May 1989
Captain May 1991
Major Nov. 1998
Lieutenant Colonel Feb. 2003
Colonel January 2007
Brigadier General Oct. 2012
Major General Oct. 2015
Lieutenant General Oct. 2018

(Current as of December 2018)

DOCUMENTS SUBMITTED FOR THE RECORD

MARCH 14, 2019



SECRETARY OF DEFENSE
1000 DEFENSE PENTAGON
WASHINGTON, DC 20301-1000

JAN - 8 2019

The Honorable Adam Smith
Chairman
Committee on Armed Services
U.S. House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

The Department of Defense requests your support in securing the prompt repeal of title 10, U.S. Code, section 169. That section was added by section 1601(a) of the John S. McCain National Defense Authorization Act for FY 2019 (Public Law 115-232) and provides that the President, through the Secretary of Defense, "shall establish under the United States Strategic Command a subordinate unified command to be known as the United States Space Command."

On December 18, 2018 the President, acting on advice from then Secretary Mattis and the Chairman of the Joint Chiefs of Staff and with unanimous support of the Joint Chiefs, directed, consistent with title 10, U.S. Code, section 161, and other applicable U.S. law, the establishment of U.S. Space Command as the eleventh unified combatant command. Building on lessons learned from the establishment of U.S. Cyber Command, the department determined that establishing a unified combatant command for space, rather than a subordinate command, is a necessary step to address the serious and growing national security challenges in the space domain. A unified combatant command will make our efforts in space more effective and focused, and will streamline command and control for time-sensitive operations.

The establishment of U.S. Space Command is separate but complementary to the proposal to establish a U.S. Space Force as the sixth branch of the Armed Forces. Together, these efforts will ensure we maintain our advantages in space for generations to come. I look forward to continuing to work with you on these critical national security initiatives in the year ahead.

The Office of Management and Budget advises that there is no objection, from the standpoint of the Administration's program, to the presentation of this legislative proposal for your consideration and the consideration of Congress.

Patrick M. Shanahan
Acting

Enclosure:
Draft legislative language for repeal of title 10, U.S. Code, section 169

cc:
The Honorable William M. "Mac" Thornberry
Ranking Member



OSD017005-18/CMD021545-18

**SEC. XXXX. REPEAL OF REQUIREMENT TO ESTABLISH UNITED STATES
SPACE COMMAND AS A SUBORDINATE UNIFIED COMMAND.**

(a) REPEAL.—Section 169 of title 10, United States Code, is repealed.

(b) TABLE OF SECTIONS AMENDMENT.—The table of sections at the beginning of chapter 6 of title 10, United States Code, is amended by striking the item relating to section 169.

**WITNESS RESPONSES TO QUESTIONS ASKED DURING
THE HEARING**

MARCH 14, 2019

RESPONSES TO QUESTIONS SUBMITTED BY MR. WITTMAN

Secretary ROPER. Redesign of the boom and RVS to mitigate deficiencies are underway. Boeing is on contract to lower the boom load to meet new requirements that arose during A-10 developmental testing. Boeing also signed a legally-binding agreement to bring RVS into compliance with nine Critical Performance Parameters (CPPs) desired by our government-industry Tiger Team, which will be implemented at their expense under the original fixed-price contract. Design, still underway, should conclude in the next few months. Exact timelines for the design, install and retrofit of both the boom and RVS will be refined once designs are complete. Due to the expected extensiveness, the Air Force still estimates 3-4 years to fully retrofit all delivered KC-46 tankers. [See page 23.]

Secretary ROPER. The Air Force has pursued a Section 804 acquisition strategy for B-52 CERP, accelerating the start of the program, buying down design and integration risk earlier to address an impending readiness crisis with the TF-33 engines without sacrificing any engineering rigor. The approved Section 804 acquisition strategy calls for two distinct rapid prototyping spirals. Spiral one will deliver a virtual power pod prototype demonstrating the commercial engine candidate's performance in the B-52's unique, side-by-side pod configuration, and a virtual system prototype integrating the virtual power pod with the modified propulsion system. Spiral two will deliver actual physical prototypes after engine downselect—two B-52H aircraft modified with new hardware and software to support test activities. The engine candidates are derived from commercially available, proven designs. The prototyping phase will conclude in 2025, with the production effort to immediately follow. Initial Operational Capability is projected for 2028; Full Operational Capability is projected for 2034. [See page 23.]

General FAY. Both MCRS-18 and AFWN use the 2018 National Defense Strategy (NDS) wartime mission construct and both studies used the same mobility analysis methodology. However, the studies differ in the planning horizons, associated pacing demands, and simultaneity guidance on prioritization of NDS missions. Specifically, force structure recommendations for the number of required air refueling aircraft/squadrons differ between studies due to different time frames, scenarios/OPLANS, and risk. These differences can be attributed to study scope parameters in the areas above as well as the overall intent for an AFWN study unconstrained fiscally while MCRS-18 assessed the programmed fleet at the end of the FYDP (FY23) for force sizing sufficiency to satisfy NDS demands. [See page 20.]

RESPONSE TO QUESTION SUBMITTED BY MRS. HARTZLER

Secretary ROPER. The Air Force continues to project a 6 to 8 month slip to the B-2 DMS-M software certification milestone. We are still evaluating impacts to the overall DMS-M schedule. The Air Force will provide a revised DMS-M schedule to the Committee once finalized. [See page 18.]

RESPONSE TO QUESTION SUBMITTED BY MRS. LURIA

General FAY. Both MCRS-18 and AFWN use the 2018 National Defense Strategy (NDS) wartime mission construct and both studies used the same mobility analysis methodology. However, the studies differ in the planning horizons, associated pacing demands, and simultaneity guidance on prioritization of NDS missions. Specifically, force structure recommendations for the number of required air refueling aircraft/squadrons differ between studies due to different time frames, scenarios/OPLANS, and risk. These differences can be attributed to study scope parameters in the areas above as well as the overall intent for an AFWN study unconstrained fiscally while MCRS-18 assessed the programmed fleet at the end of the FYDP (FY23) for force sizing sufficiency to satisfy NDS demands. [See page 8.]

QUESTIONS SUBMITTED BY MEMBERS POST HEARING

MARCH 14, 2019

QUESTION SUBMITTED BY MR. COURTNEY

Mr. COURTNEY. Does the Air Force to consider the NP-2000 upgrade a safety upgrade or an efficiency upgrade?

Secretary ROPER and General FAY. No, the Air Force does not consider the NP2000 upgrade to be a safety or efficiency upgrade. The implementation of NP2000 is based on the increased performance capability of the NP2000 propellers, predominately in take-off and low level operations. In addition, it incorporates a more advanced design and is corrosion resistant.

QUESTIONS SUBMITTED BY MR. NORCROSS

Mr. NORCROSS. The tanker fleet's end strength will require careful synchronization between KC-10 retirements and KC-46 production and delivery to sustain current force projection capabilities. Dr. Roper met with Boeing this week to discuss the Foreign Object Debris issue and then following the meeting a new KC-46 was accepted at Altus Air Force Base. Further, this budget request of 12 KC-46s is 3 less than the Air Force indicated in the Future Years Defense Program (FYDP) delivered with the FY 19 budget.

Do these recent setbacks and this new budget request effect the remaining KC-46 delivery schedule?

Given the agreement for a "one for one" swap at Joint Base McGuire-Dix-Lakehurst and Travis, how does this budget insure the maintenance of the KC-10 until the KC-46 is fully delivered?

Can you speak to the importance of ensuring the infrastructure at these locations is built up to support delivery of KC-46s on time? And, have you received any indication that the President plans to move Air Force military construction funding that would impact delivery of KC-46s as part of his emergency declaration to build the border wall?

Secretary ROPER. No. The recent setback caused by Foreign Object Debris was temporary and deliveries have resumed. Additionally, the FY20 President's Budget request for 12 aircraft in FY20 will not delay KC-46 deliveries. Congress appropriated funding for an additional 3 aircraft in FY18, which was not accounted for in the FY19 President's Budget. These aircraft, combined with the FY20 request for 12 aircraft, maintains the Air Force's plan to purchase 15 aircraft a year. The System Program Office is in the process of updating the overall KC-46 delivery schedule and will provide an updated schedule to Congress as soon as possible.

Answer 2: The FY20 President's Budget provides additional Operations and Maintenance (O&M) funding for the KC-10 due to KC-46 delivery delays. This funding will ensure maintenance of the KC-10 at Joint Base McGuire-Dix-Lakehurst and Travis until replaced by the KC-46.

Answer 3: The Air Force is working to ensure that infrastructure will be in place to support on time deliveries of the KC-46. There are no plans to move Air Force military construction funding that would impact delivery of the KC-46.

Mr. NORCROSS. The tanker fleet's end strength will require careful synchronization between KC-10 retirements and KC-46 production and delivery to sustain current force projection capabilities. Dr. Roper met with Boeing this week to discuss the Foreign Object Debris issue and then following the meeting a new KC-46 was accepted at Altus Air Force Base. Further, this budget request of 12 KC-46s is 3 less than the Air Force indicated in the Future Years Defense Program (FYDP) delivered with the FY 19 budget.

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Can you speak to the importance of ensuring the infrastructure at these locations is built up to support delivery of KC-46s on time? And, have you received any indication that the President plans to move Air Force military construction funding that

would impact delivery of KC-46s as part of his emergency declaration to build the border wall?

General FAY. *Do these recent setbacks and this new budget request effect the remaining KC-46 delivery schedule?* No. The recent setback caused by Foreign Object Debris was temporary and deliveries have resumed. Additionally, the FY20 President's Budget request for 12 aircraft in FY20 will not delay KC-46 deliveries. Congress appropriated funding for an additional 3 aircraft in FY18, which was not accounted for in the FY19 President's Budget. These aircraft, combined with the FY20 request for 12 aircraft, maintains the Air Force's plan to purchase 15 aircraft a year. The System Program Office is in the process of updating the overall KC-46 delivery schedule and will provide an updated schedule to Congress as soon as possible.

Given the agreement for a "one for one" swap at Joint Base McGuire-Dix-Lakehurst and Travis, how does this budget insure the maintenance of the KC-10 until the KC-46 is fully delivered? The FY20 President's Budget provides additional Operations and Maintenance (O&M) funding for the KC-10 due to KC-46 delivery delays. This funding will ensure maintenance of the KC-10 at Joint Base McGuire-Dix-Lakehurst and Travis until replaced by the KC-46.

The FY20 budget includes an increase of overall Total Force end-strength of 4,400 personnel. Of the 4,400 personnel, 1,400 of those are active duty and Air National Guard Aircraft Maintenance personnel. Those additional personnel will be utilized to support increasing requirements from KC-46 deliveries as well as continuing F-35A deliveries. The Major Commands will balance manpower requirements as we transition between KC-10 and KC-46 tankers at McGuire-Dix-Lakehurst and Travis.

Depot funding within the FY20 PB covers the requirement of both the KC-10 and KC-135 fleet, a three KC-46 aircraft reduction will not affect the KC-10/KC-135 Depot Requirements. Going forward the Cost per flying hour (CPFH-Operations & Maintenance (O&M) only) through the FYDP will remain constant, the cost difference between the KC-10 and KC-46 in CPFH funds are negligible and will have no impact from our perspective on the remaining KC-46 delivery schedule.

Can you speak to the importance of ensuring the infrastructure at these locations is built up to support delivery of KC-46s on time? The Air Force is working to ensure that infrastructure will be in place to support on time deliveries of the KC-46. Achieving full operational capacity for new weapons systems depends on the delivery of necessary hangars, maintenance and training facilities, airfields, and fuel infrastructure. The attached Bullet Background Paper details the military construction program supporting KC-46 bed-down from FY14 through FY23.

[See graphic on following page.]

And, have you received any indication that the President plans to move Air Force military construction funding that would impact delivery of KC-46s as part of his emergency declaration to build the border wall? There are no plans to move Air Force military construction funding that would impact delivery of the KC-46.

**BULLET BACKGROUND PAPER
ON
KC-46A PEGASUS MILCON PROGRAM**

PURPOSE

Provide information on military construction (MILCON) in support of the KC-46A Program

DISCUSSION

- Altus AFB – 8 aircraft, 8 projects totaling \$66M, first aircraft arrival in Jan 19
 - FY14 & FY16: 5 projects are complete
 - FY17 & FY18: 2 projects are in construction
 - FY19: 1 project advertised & in source selection
- McConnell AFB – 36 aircraft, 16 projects totaling \$229M, first aircraft arrival Feb 19
 - FY14-17: 16 projects are complete
- Tinker AFB – Depot maintenance, 7 projects totaling \$378M, first aircraft arrival Jun 20
 - FY15-17: 4 projects in construction, 1 land acquisition completed in 2015
 - FY19/21: 2 projects advertised
- Joint Base McGuire-Dix-Lakehurst, 24 aircraft, 11 projects totaling \$147M, first aircraft arrival Aug 21
 - FY18: 1 project in design; 4 in acquisition; 6 in construction
- Travis AFB – 24 aircraft, 10 projects totaling \$157M, first aircraft arrival Jun 23
 - FY18-21: 1 project in construction; 9 projects advertised or in design
- Main Operating Base (MOB) 5 – Strategic basing process started in FY 2019; final basing decisions made about three years prior to projected aircraft delivery; MILCON as early as FY21
 - FY14-19 appropriations, and FY20 PB FYDP 20-24 MILCON:

	Depot (AFMC)	FTU (AETC)	MOB 1 (AMC)	MOB 2 (ANG)	MOB 3 (AFRC)	MOB 4 A & B(AMC)	MOB 5* (AMC)	Unspecified (AMC)
FY14	\$8.6M	\$27.5M	\$184.7M					
FY15	\$111.0M		\$34.4M	\$41.9M				
FY16	\$37.0M	\$10.4M	\$4.3M	\$2.8M				
FY17	\$17.0M	\$11.6M	\$8.6M	\$1.5	\$98.0M			
FY18		\$4.9M			\$6.4M	\$114.7M**		
FY19	\$166.0M	\$12.0M						
FY20						\$26.1M		
FY21*	\$135.1M					\$156.5M	\$289.1M	
FY22*							\$249.0M	
FY23*								\$253.9M

* MOB 5 estimates are programmatic. Site-specific estimates are not available at this time.

** FY18 NDAA authorization

