HEARING TO RECEIVE TESTIMONY ON TACTICAL AIRCRAFT PROGRAMS IN REVIEW OF THE DEFENSE AUTHORIZATION REQUEST FOR FISCAL YEAR 2012 AND THE FUTURE YEARS DEFENSE PROGRAM

TUESDAY, MAY 24, 2011

U.S. SENATE
SUBCOMMITTEE ON AIRLAND,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

The subcommittee met, pursuant to notice, at 2:34 p.m. in room SR–232A, Russell Senate Office Building, Senator Joseph I. Lieberman (chairman of the subcommittee) presiding.

Committee members present: Senators Lieberman and Brown.

Majority staff members present: Creighton Greene, professional staff member.

Minority staff members present: David M. Morriss, minority staff director; Christopher J. Paul, professional staff member; and Michael J. Sistak, research assistant.

Staff assistants present: Brian F. Sebold and Breon N. Wells.

Committee members' assistants present: Christopher Griffin, assistant to Senator Lieberman; and Charles Prosch, assistant to Senator Brown.

OPENING STATEMENT OF SENATOR JOSEPH I. LIEBERMAN, CHAIRMAN

Senator LIEBERMAN. The subcommittee hearing will come to order. I want to welcome our witnesses and thank each of you for appearing before the subcommittee today.

It's against the backdrop of the extraordinary service, bravery, and sacrifices of the men and women of our Armed Forces that we convene this session of the Airland Subcommittee to discuss tactical aviation programs, part of our jurisdiction of this subcommittee, an important part, and one on which we will attempt to counsel the full committee as it develops the defense authorization bill this year.

Every year we're challenged to make decisions balancing competing demands for resources, including resources for current operations and investment in future modernization. This year is no different, except maybe it's more difficult than normal because of the increasingly constrained budget environment in which we're operating.

Last Thursday the full Senate Armed Services Committee heard from several witnesses on the current status of the F–35 Joint Strike Fighter program. I think it was important and necessary that the full committee discuss the JSF program because the cost, schedule, and performance of the Joint Strike Fighter are central to so many questions of how we achieve the balance I just talked about between the demands of maintaining readiness in the near term and modernizing for the future.

Today we want to focus following on the hearing last week on how the services are responding to the most recent Joint Strike Fighter delays and what effects those delays are having on our forces. There are worrisome prospects for the future of tactical air programs, particularly in terms of having the numbers of aircraft we need to keep from hollowing out our tactical aviation forces.

I will say to the witnesses that we've been following your attempts to mitigate or close those gaps, and I look forward to hearing about them and discussing them with you. For instance, the Department of the Navy has made continuing attempts to reduce the strike fighter shortfall to manageable levels. 3 years ago the Department of the Navy was estimating that we would be facing a shortfall in 2017 that optimistically would amount to 125 tactical fighters needed to outfit our 10 aircraft carrier wings and 3 Marine Corps air wings. 2 years ago, based on further analysis, the Navy was estimating that the maximum shortfall could be nearly twice that large or roughly 250 aircraft. Last year the estimate was that, absent certain actions by the Department, the shortfalls could reach 267 aircraft. However, the Department of the Navy believed, it said then, that with certain actions, such as reducing squadron size, conducting service life extensions on some aircraft, and reducing time aircraft spend in the depots, they could—the Navy could reduce the gap to roughly 150 aircraft.

This year, in the submission of the budget the Navy is estimating that, with additional new production of F/A–18E/F aircraft in the future year defense program and with a service life extension program for 150 existing F–18s, the shortfall would actually go down to 65 aircraft. And the Navy has now characterized that expected shortfall as manageable.

Since the budget was submitted, the Navy has actually provided an additional—the Navy was provided an additional nine F/A–18 E and Fs in the 2011 DOD Appropriations Act, the one that we just passed a month or so ago. Those additional aircraft, alongside some other measures, have now lowered the Navy's estimate of the gap to 52 aircraft, which is quite a remarkable change over the years that I've cited.

Admiral Philman, in light of the significant changes in the Navy's estimated shortfall in recent years, I'm going to be interested in hearing you discuss how confident you are in the current estimate, how it would be affected by any additional delays in the Joint Strike Fighter program, and whether the continued acquisition of the F/A–18E/F aircraft will ultimately reduce the Navy's long-term requirement for Joint Strike Fighter aircraft.

There's a similar story regarding the Air Force. Previous Air Force witnesses at our aviation hearings have projected a potential shortfall of Air Force tactical fighters in excess of 800 aircraft

around 2025, which was a jarring number to hear when we heard it here. This year, General Carlisle, in your statement you indicate that the Air Force is now facing a shortfall between 3 and 5 percent through the FYDP years. With a total Air Force requirement of some 2,000 aircraft, I'm assuming that that shortfall goes somewhere between 60 and 100 aircraft.

So, General, as I mentioned to the Admiral, in your testimony you describe the Air Force's investigation into ways to extend the service lives of A–10, F–15, and F–16 aircraft to help mitigate the gap between requirements and aircraft that it foresees. In your prepared testimony you state that "actions to extend and modernize the legacy fleet are a bridge to fifth generation capabilities and are not considered replacement actions." That's an important statement, which I would like to discuss with you in the question and answer period.

So this is a very timely, very important conversation we're going to have, and we have exactly the right people here to have it, and I thank you for that.

Senator Brown.

STATEMENT OF SENATOR SCOTT P. BROWN

Senator BROWN. Thank you, Mr. Chairman, for holding this important hearing. It's good to see you again.

Senator LIEBERMAN. Thank you.

Senator BROWN. I thank the witnesses also for their attendance.

Just listening to your opening statement, I also am deeply concerned about the shortfalls and how that relates to our tactical advantage or disadvantage when it comes to upcoming conflicts. Without a doubt, for me combat tactical aviation presents some of the most significant challenges, I think you'll agree, for all services. Perhaps chief among them are the gaps between the fighter aircraft and the strike fighter aircraft capability in the Air Force and the Department of the Navy respectively.

Critical to the military departments' ability to fill these capability gaps is how successfully they hedge. It seems like we're getting close to that point where potentially the safety and security of not only our men and women serving, but our country, may be at stake, and I want to just see what's fact and what's fiction in that. And I want to make sure that we avoid schedule slips and cost growth to extend the service lives of aging aircraft—I'm sorry. One way to avoid that is to do what you're doing, which is to try to get every last flying hour out of these aircraft. And "manageable"; I don't know if I want to be "manageable." I want to make sure we're at an advantage and there's no question whatsoever that we are going to be ready for whatever task is at hand.

It's our responsibility, through your leadership, Mr. Chairman, to make sure that the DOD and the prime contractor, Lockheed Martin, execute the Joint Strike Fighter program so that it provides tactical capability as needed, on time, and on budget. Obviously, we're having some very serious issues with that, and the hearing last week I found very informative.

So I'm going to be asking, for example, what's your plan B if the F–35 is delayed further, either in terms of material or force structure solution? And specifically, given the incredible cost—I know

Senator McCain touched on that as well—the cost growth of producing, not to mention owning and maintaining, the Joint Strike Fighter, where does that leave us? Have we started to reexamine high-low mixes amongst its oldest strike fighters, as the Navy has with its continued purchase of FA–18 Hornets?

With regard to the Hornet program, I understand in order to maintain a tactical advantage with these jets you want to continue, the Navy wants to continue, buying the advanced system, the MIDS system. I'm a little bit concerned about the assessment by the Pentagon's chief independent weapons tester that it's not operationally suitable yet and should not be fielded until the deficiencies are identified and fixed. So I want to understand the Navy's position, so I'm going to obviously ask that question as well.

As for the Air Force, I'm very concerned, as many others are, at the costs associated with operating and maintaining our legacy fleet of F–22 Raptors. I know the President's asking for $2 billion this year, even though we're not buying any new aircraft. So I'd like to see where the breakdown of that is. Is it just all just maintenance and upgrades and things like that? And if it's that the latest hardware and software upgrades are over budget and behind schedule, I'd like to ask the Air Force about that as well.

Then I'm keenly aware, in terms of the Marines, they need to start replacing their aging combat aircraft as well. The AV–8B Harrier jet is on its last legs. I think we all know and understand that. Yet the Marine variant of the F- 35 has the most difficulty in development so far and is facing a 2-year probation. So after—what does that mean for the Marines? Where are they? They're obviously traditionally the first to go in and we want to make sure that they're adequately—have the proper equipment that they need to do their job and complete the mission safely and successfully.

Of all the services, the Marines face the most dramatic consequences of any further delays or costs as a result of the age of their aircraft. I'd like to hear the perspective of the Marine Corps on that particular issue.

Also, two-thirds of the total cost of the major weapons system over its entire life cycle goes to maintain ability or operations and support O and S costs. Poor reliability can lead to varying O and S costs, so those systems must be reliable. Last June the chief independent tester was concerned about the reliability of our newest weapons system. Earlier this year, a directive was issued that established a set of procedures that sought to enhance the reliability immediately. I'd like to hear from witnesses as to how this directive is being implemented in programs in your portfolio.

Then finally, Mr. Chairman, with your indulgence, China has been in the press a lot lately for its fighter development and Russia has been exporting fighter aircraft and related technology for years. I'd like to know what each of our witnesses feel and believe are the pacing threats for military aviation in the U.S. In other words, what keeps you up at night and how do we respond and are we responding properly, and if not what do you need from us, what tools and resources do you need from us, to keep us in that I think tactical advantage which is so vital to our Nation's security?

So with that, Mr. Chairman, I look forward to the witnesses' statements and testimony.

Senator LIEBERMAN. Thanks, Senator Brown, for that thoughtful statement.

We'll go to the witnesses. First will be Lieutenant General Herbert J. Carlisle, Deputy Chief of Staff for Operations, Plans, and Requirements at the United States Air Force. Welcome. Good to see you again.

STATEMENT OF LT. GEN. HERBERT J. CARLISLE, USAF, DEPUTY CHIEF OF STAFF FOR OPERATIONS, PLANS, AND REQUIREMENTS, U.S. AIR FORCE

General CARLISLE. Thank you, sir. It's good to see you as well.

Chairman Lieberman, Ranking Member Brown: Thank you for the opportunity to provide you with an update on our tactical aviation programs and the U.S. Air Force. Engaged around the world in overseas combat operations, supporting the combatant commanders, our Nation's airmen greatly appreciate your continued support. Our Air Force is continuing to organize, train, and equip our airmen so they can successfully operate across the entire spectrum of military conflict.

The 2010 Quadrennial Defense Review set four objectives to guide current and future action and planning: prevail in today's war, prevent and deter conflict, prepare to defeat adversaries and succeed in a wide range of contingencies, and preserve and enhance the All-Volunteer Force.

Today I'd like to focus on preventing and deterring conflict and preparing to defeat our adversaries. As I look at these objectives and consider equipping the future military, I couldn't help but look at history a bit. Opposing militaries have long relied on technological advances to change the course and even the nature of war to their advantage. At the outset of World War II, the Mitsubishi A6M Zero was the best carrier-based airplane in the world. It was lightweight and highly maneuverable. It was not surpassed in the Pacific until the F–6 Hellcats, F–4U Corsairs, and P–38 Lightnings arrived en masse in the latter half of the war.

The Mikoyan-Gurevich MiG–15 was a Soviet swept-wing jet fighter that dominated early stages of the Korean War. It had significant advantage over U.S. jets, including higher ceiling, faster acceleration and rate of climb, better turning radius, and a more powerful machine gun, until the F–86 came along and generated a 12 to 1 kill ratio against the MiGs.

Development of miniaturizing technologies in the 1980s and 1990s led the United States Air Force to invest heavily in remotely piloted aircraft technology that provided an unprecedented ISR advantage in capabilities and an asymmetric advantage over our adversaries.

So as we look to the tactical air of the future, the Air Force is working to ensure we maintain our Nation's freedom of action in the most effective and efficient way.

As the subcommittee specifically requested, I have detailed how we are going to deal with the delay in the planned delivery of the F–35 Joint Strike Fighter program in my written testimony. Because these delays do increase our reliance on legacy fighter fleet and our ability to maintain that fleet, we have looked at ways to

extend the service life of that fighter fleet and modernize combat capability.

The F–16 service life extension program is but one example of that effort to mitigate the fighter force shortfall, and I stand ready to address any of those mitigation efforts during testimony.

As we look at the QDR and what is required of us now and in the future, the Air Force is committed to working with our partners to determine the right procurement, sustainment, and retirement of our tactical aircraft to ensure we will be successful across the full range of military operations in the future.

I thank the subcommittee for allowing me to appear before you today, for your continued support for all of your airmen around the world. I ask that my written statement be accepted into the written record and I look forward to your questions today. Thank you, sir.

[The prepared statement of General Carlisle follows:]

Senator LIEBERMAN. Thanks, General Carlisle. Your statement and that of the others will be entered into the record in full as if read.

Next we're going to go to Lieutenant General Terry Robling, Deputy Commander for Aviation, U.S. Marine Corps. Thanks, General, for being here.

STATEMENT OF LT. GEN. TERRY G. ROBLING, USMC, DEPUTY COMMANDANT FOR AVIATION, U.S. MARINE CORPS; ACCOMPANIED BY RADM DAVID L. PHILMAN, USN, DIRECTOR, WARFARE INTEGRATION/SENIOR NATIONAL REPRESENTATIVE, U.S. NAVY

General ROBLING. Chairman Lieberman, Ranking Member Brown: On behalf of Rear Admiral Philman and with your permission, I'll do a combined statement.

Senator LIEBERMAN. Good.

General ROBLING. It's a privilege to us to appear before you today to discuss the 2012 budget submission as it relates to Navy and Marine Corps tactical aviation. Thanks to the consistent support of the U.S. Congress, your marines and sailors are performing their missions around the clock and around the world knowing that their country is behind them.

The Department of the Navy is dedicated to the F–35 program. The Joint Strike Fighter is vital to our national security. It will be an integral element of our Navy's persistent presence and multimission capability and to the Marine Corps's ability to conduct expeditionary and carrier operations. Continued funding and support from Congress for this program is of utmost importance.

The Commandant of the Marine Corps and the Chief of Naval Operations strongly support the actions that Vice Admiral Vinlet and his team have taken over the past year to keep this program on track. They have conducted a rigorous assessment of this program, the technical baseline review, and a team of more than 120 experts determined the F–35 systems, development, and demonstration phase should be restructured, variants of the F–35 aircraft decoupled, and the production ramp reduced while the final assembly process in Fort Worth is still maturing.

The Department of Defense now has a greater insight into the contractor's production performance. We took the prudent course in

delaying additional procurement, ensuring that engineering fixes are identified and incorporated early into the production cycle. During the next 2 years of F–35 scrutiny, Admiral Philman and I will be personally involved with the program and closely supervising it.

The Department of the Navy is taking delivery of four B model and two C model SDD F–35s to test, with two more expected this summer. All three variants of this aircraft are in testing now and this testing is the extremely well. The B model has completed more than 200 short takeoffs and more than 100 vertical landings and 150 slow landings, and we are moving steadily toward preparation for shipboard trials of that aircraft in the fall of this year. The C model Joint Strike Fighter is also proceeding smoothly towards shipboard integration and this summer the F–35C team will begin carrier suitability testing at Lakehurst, New Jersey.

The F135 engine now has more than 1,300 hours in the air and more than 17,000 hours in test. Overall, the Department of the Navy is very pleased by the changes Vice Admiral Vinlet has implemented in the program and his personal approach towards transparency, realism, and strict engineering discipline is very much appreciated.

As we plan for the arrival of the extraordinary new warfighting capability of the Joint Strike Fighter, we are taking careful and systematic steps to manage our current TACAIR assets. This includes a process of assessment, inspection, and investment in those legacy aircraft we have today. Our use of the inventory forecasting tool, high flight hour inspections, and the F–18 service life management program, or SLMP, will keep those aircraft flying safely.

By managing our program of investment in current assets and with the help of Congress, our predictions for a strike fighter shortfall have fallen by half from last year's estimate of around 100 aircraft to a current estimate of 52. The Department of the Navy assesses—the Department of the Navy assesses, and CAPE agrees, that this is a manageable number as we work to extend the service life of up to 150 of our A through D legacy Hornets out to 10,000 hours in anticipation of the arrival of the Joint Strike Fighter.

The Navy and Marine Corps are maximizing those planes in daily operations. This month we signed a new tactical aircraft integration memorandum of agreement updating and revalidating our commitment to sharing fighter attack aircraft in forward deployments. That has proven a remarkably effective model for the planning and execution of worldwide tactical aviation employment and we are pleased to continue as a team to maximize these assets.

In the defense of our maritime Nation, the United States Navy and Marine Corps team have maintained a forward- deployed seaborne presence for 235 years. An example of the need of these naval aircraft is action in Libya just 2 months ago. Six of our Harriers, flying as part of a Marine expeditionary unit aboard a Navy amphibious ready group just off the North African coast, were up and flying sorties from the first hours of that campaign. This is a demonstration of the value of forward naval forces and of the flexibility of tactical naval aviation.

Now in our 10th year at war, your Navy-Marine Corps team is poised to meet future challenges at sea and around the world. The significant achievements of naval aviation are always focused on

and are in support of our men and women in combat. On behalf of the more than 40,000 marines working hard on the aviation side of our air-ground team and of the 80,000 sailors working hard for the U.S. naval aviation enterprise, thank you for your dedication and oversight. We are doing what America wants us to be doing, providing forward presence with agile and capable forces.

Thank you for this opportunity to speak with you today. We look forward to answering any questions you may have.

[The joint prepared statement of General Robling and Admiral Philman follows:]

Senator LIEBERMAN. Thanks, General. I appreciate the statement.

We'll do a 7-minute round, Senator Brown and I and anybody else from the Senate who comes, so we'll rotate back and forth.

A while ago, Secretary Gates said that in the budget discussions going on now everything's on the table, and I include—I presume that therefore means even the overall Joint Strike Fighter program. So I think as we—before we get into the detailed questions about where we are on the delay, I just want to ask—and maybe I'll begin with you, General Carlisle—the baseline question. And I'll ask it from a skeptic's point of view, although I'm not as much of a skeptic as the question, which is that: In a world in which we're involved in two wars that are unconventional and in which our security is now threatened by remarkably unconventional means, such as cyber attack, and, as you mentioned parenthetically, unmanned aircraft are playing an increasingly significant role, what's the argument for a fifth generation fighter?

And if I can be more specific and urge you to be specific, who are we preparing the fighter to defend us against?

General CARLISLE. Thank you, Chairman, for that question. Clearly your initial point is we are engaged in a conflict, and a priority of the Department of Defense and certainly all the services is to win today's conflict, and we are full in doing everything in that that we can.

Having said that, there is a proliferation of anti- access, area denial capabilities out there. Specifically in the Pacific, there's a lot of them with respect to the PRC.

Senator LIEBERMAN. We're thinking of China?

General CARLISLE. Yes, sir. And they have the ability in their latest generation air defense systems, as well as the J–20 that rolled out, the PAC–FA that rolled out from Russia, as well as what they're doing in advancing their Su- 30s and those type airplanes and their SAMs.

It's not just a question of what's there, but also what they proliferate, where they sell those things to. As you well know, the PRC is selling things, as are the Russians, to just about anywhere in the world. There's other countries besides the PRC that would provide us with an anti-access, area denial threat. There's areas—certainly one of the Nations, Iran is one that, if for some reason, as they continue to upgrade their systems and they spend money on buying those.

Senator LIEBERMAN. With the case of Iran, it would be both their own development of capabilities, but also the fact that they would perhaps acquire?

General CARLISLE. Yes, sir, I think that's the case. If you look at their surface-to-air systems, their anti- aircraft, their integrated air defense systems, they're buying those from the Russians predominantly right now, and those are the systems that we'd have to be able to penetrate if we ever wanted to do anything in reference to any of the activities going on inside Iran, nuclear activities or anything.

Senator LIEBERMAN. So in the case of China, for instance, or some of the Russian capabilities, would you say that they make our current TACAIR vulnerable?

General CARLISLE. Sir, I would. I would say that if maintaining influence in the Pacific region, which everybody believes we definitely need to do, and our ability to protect our allies and friends in that part of the world, we would have to travel and go to their systems. And if we go to their systems and they'd have those anti-access capabilities, they have their surface to air systems, they have their surface fleet, the SAN–9, HQ–9s, rather than the SAN–20s, the HQ–9s, about their surface combatants in and around the Pacific. So clearly it would put our current legacy fighters in a fight where it would be difficult for us to penetrate those kind of areas.

Senator LIEBERMAN. General Robling and Admiral Philman, would you like to add anything to that?

General ROBLING. Sir, General Carlisle did an excellent job of answering that question for you. Just I would add that both General Carlisle and I just came from the Pacific region, in my case as the commander of the 3rd Marine Expeditionary Forces in Japan. So our worry is the weapons that China is developing in the Pacific case, where those would proliferate, particularly in North Korea's case.

But in the Iran case, it's not just surface to air threat. It's also the surface to surface threat. And it's not just why do we need this stealthy aircraft with these very capable precision weapons; it's the ability to go in and neutralize those surface to surface threats as well.

Senator LIEBERMAN. Got you.

Admiral?

Admiral PHILMAN. Thank you, sir, and thanks for the opportunity to be before the subcommittee.

Senator LIEBERMAN. Thank you.

Admiral PHILMAN. Sir, the anti-access and the area denial piece that was mentioned before, we want to be there in the three major reasons, the PRC, the North Korean scenario, and the Iranians. As you alluded to, whether they develop those capabilities themselves or acquire it, there is a real belief that that will be something we will have to face in the future.

If we are unprepared for that, then the follow-on efforts that would be in any campaign would be woefully inadequate. So if you're able to invest in those more advanced, fifth generation fighters, not only to deliver weapons but to loiter in contested air space, to have the ISR piece is very important.

Senator LIEBERMAN. Okay. I think that establishes a baseline.

Let me ask you if you would respond to the numbers that I cite in my opening statement, which are a really quite significant drop in estimates of shortfall. And help me understand how you were

able to achieve that drop and whether you're confident now, because there's been such a significant variation in recent years in the predicted shortfall, that the numbers you've given as part of this budget will hold up.

Admiral Philman, why don't we start with you this time.

Admiral PHILMAN. Yes, sir. As we first uncovered or we realized the strike fighter shortfall several years ago, it was really precipitated by the initial delays in the Joint Strike Fighter program. So those initial numbers were an estimate based on when will—the question to ourselves was, when will the aircraft be delivered, and then what is the existing aircraft viability?

Early on we had flown the F–18 to its maximum. We learned more about how the life is expended, and the good engineers at Patuxent River were able to go back in and figure out what was left on the airplane. So the initial estimates certainly are high and with good reason. But the more we've learned, the more we understand how we fly the airplane, the mitigation measures that we have on a daily basis at the flight line on how to extend the life of existing airplanes. And then the confidence we have now, gaining confidence in the F–35 program, it gives us good reason to be confident.

Now, the F–18E and F legacy fleet is very important to us to get us to that fifth generation fighter. So we figure we have about 150 aircraft that are the best population from which we could extend. That allows us to keep the flight decks viable, helps the Marine Corps with their fighter population, to get us to the fifth generation fighter, the F–35B and C.

So yes, sir, we've learned as we've gone. The engineers have been very diligent in understanding what they see when they open up airplanes, the high flight hour inspections and the predictions of what can be repaired in a SLEP program, service life extension program. So all those things combined give me confidence that we're on the right path.

Am I satisfied? Certainly not. As was mentioned earlier, we want to maintain our advantage in every case possible.

Senator LIEBERMAN. But you'd say—well, some people would characterize the existing projected shortfall or have characterized it as manageable. Is that a word you'd use, or how would you describe it?

Admiral PHILMAN. That was a word that was used in previous testimony, and I believe that to be true. The other piece, that I failed to mention earlier, was the 41 aircraft that are in the '12 budget and the 9 that became available when the budget was passed for fiscal year 2011. That gives us 50 airplanes that we did not have before. That changes the calculus in a big way.

So all those things combined, and you consider the way we're flying the aircraft, we're preserving the life, whether there are carrier-arrested landings, whether they're flying off the beach in different ways, all those things combine gives a calculus to be confident that we can get to the F–35C. Manageable? Yes, sir. Again, I'm not satisfied that that's where we should be. We have got the senior leadership from the Commandant of the Marine Corps and the CNO on down that says, okay—charges us on the flight line to

schedule the aircraft properly, maintain them properly, get them into repair and out as quick as we can.

Senator LIEBERMAN. So it's not desirable, but it's manageable, or you can deal with it?

Admiral PHILMAN. Yes, sir. That's a shorter answer to the same question.

Senator LIEBERMAN. No problem.

General Carlisle, with Senator Brown's indulgence—I'm over the 7 minutes—but just to continue in this round. Tell me about how the Air Force has reduced the shortfall and whether you're confident now that the numbers you're giving us this year are going to hold up?

General CARLISLE. Yes, sir. Pretty much the same discussion as my friend. The analysis that is ongoing—and we continue to look at these airplanes. We have a program called the aircraft structural integrity program, ASIP, that continually looks at the airplanes. As part of that, we look at how we fly them, as was mentioned earlier. We call it a severity code of what kind of payload we put on and what environment we fly in, how it's flown, and record all that data, and continually update the look at the airplane.

We also do fleet viability boards. We get experts from industry and the Navy and the Air Force and all services and we look at airplanes and look at the viability of that airplane over time. That does affect how long, what the service life of those airplanes are.

The other thing I think probably changed some, chairman, from before was, is we continue to do analysis of what's asked of us, how are we going to use these airplanes what kind of airplanes we need. Today our number, we believe, given the current national military strategy, is we need about 2,000 total fighters, 1,200 primary mission fighters. And those numbers are slightly different than they were when we were reporting a larger shortfall.

So there was a little bit of analysis continuing. And to be perfectly frank, as we look at the comprehensive strategy review today and where we're going to go in the future we will continue to look at those numbers and make sure we're going to fulfill the Nation's commitment and what they want us to do with this fleet.

So as we continue to look at the airplane, we determine the life of that airplane.

The other thing, Mr. Chairman, that we had not anticipated before based on the original delivery of the F- 35 was doing a service life extension and modernization of the F–16s. We had always planned to do the A–10s, the F- 15Es, but we had not planned it. Now, given the situation we're in now, we are we going to do a service life extension program as well as a modernization program to some of our F- 16s.

Senator LIEBERMAN. Okay, thanks. I'll come back with some other questions on your answers. Thank you.

Senator Brown.

Senator BROWN. Thank you, Mr. Chairman.

I'm wondering, though, General, just to follow up a little bit, does that affect our training and the skills of the individual pilots, the way that you're kind of shifting the actual usage of the aircraft?

General CARLISLE. Sir, again, Senator, that's a great question. What we face today is our readiness in our fleet today—our aircraft are maintaining a fairly consistent availability. Our biggest shortfall is air crew training. If they spend a lot of time in Afghanistan and Iraq as they are now in continuous rotations, their ability to do the other type of training for the full spectrum operations to deal in an anti-access, area denial environment, to do maritime ops in support of the Navy, all of that training is kind of relegated to after we do the primary fight today.

So with respect to training our folks to do the mission, we have seen a degradation in that training just because of the current conflict we're at.

With respect to the aircraft, the aircraft availability and the aircraft's mission capability across the full spectrum, the aircraft are maintaining pretty even availability and mission capability rates. So that part is less of an issue than the time we have to train the air crews in the different types of missions they're going to be asked to perform.

Senator BROWN. Great, thank you. I'm wondering if any of you can comment on the fact that in the last hearing we had Dr. Carter's assessment that as of today the cost of operating the Joint Strike Fighter aircraft would be unaffordable, estimated at being a trillion dollars when adjusted for inflation. So I'd like to know, is there a plan B in any of the Air Force, Marines, Navy? Is there a plan B in the event that the JSF program is delayed even further?

Admiral PHILMAN. Thank you, Senator. The plan—our plan as it's stated right now is to get to the fifth generation fighter, with some confidence we'll get there. The good news from the U.S. Navy side is we have a hot line. The last procurement of the F–18E and F is procured in '14 and delivered in '16. That is not our primary plan A, certainly, but that is certainly a plan B that could be considered if the F–35 continues to slide.

But I am given good confidence by Admiral Vinlet that, with the now two F–35C aircraft at Pax River, that testing is going, and it'll pick up at a good clip. The third one should arrive here in just a month or 2 and we can start doing the aircraft carrier tests as well.

Senator BROWN. General Robling, given that the AV–8B Harrier is running out of time, what's the Marine Corps's thinking as to the F–35B in particular?

General ROBLING. Senator, as you know, we've been on this track for the last 15 years to downsize to a minimum number of type-model-series and really on the TACAIR side to reduce the EA–6B, the AV–8B, the Harrier that you speak of, and the FA–18 to the JSF–B model. So we believe that's the aircraft that we need.

I think without the B model this Nation's not going to have the capability to have 22 capital ships out in the global commons providing the security for this Nation and for the other nations that depend on the United States. So our plan B is to make this work. I hope that doesn't sound flip, but we've put ourselves into a big hole and I think, as Dr. Carter and Ms. Fox and Admiral Vinlet testified, they see good reason to believe that we can get the costs under control and get this aircraft flying.

In fact, the testing of this aircraft has gone extremely well. This year we've actually gotten back on track for this year, and we're well ahead of the test points that we need as we work toward ship integration at the end of this year.

Senator BROWN. I know that the 2-year probationary period for the 35B has in fact happened and as a result also the Air Force and Navy variants have been allowed to move ahead. So I think there seems to be an acknowledgment that these are now, obviously, three different aircraft, but three separate developments proceeding at different rates.

So now that the testing is well under way and procurement has started, why shouldn't we at a minimum break these three models into different programs so they can be managed discretely or separately? Any thoughts?

General ROBLING. Well, I wouldn't say that they weren't now. I would say that General Carlisle and the acquisition folks at the Air Force are just as interested in their version and track it very closely as we do ours. I would say that, even though the decoupling—we decoupled that because we did not want to hold back the C and the A models as they deliver. Quite frankly, they're delivering just behind the B model. So we actually got more test points earlier. The Air Force's A model right now has delivered more aircraft and has more aircraft in testing. The Marine Corps has four of those and we just delivered—I think we got our second C model.

So we're actually, as the testing goes and the test points, aren't really holding each model variant up.

Senator BROWN. Obviously, with the development of the new aircraft there is support facilities and different types of studies that are being done, the environmental studies, the actual construction of new hangars and whatever else is needed to support that. How is that all going and where are we with that? General Carlisle?

General CARLISLE. Senator, with respect to the Air Force, sir, we're well on the way. The first pilot training base—and it'll be a joint pilot training base—is going to be at Eglin Air Force Base in Florida, and the facilities there are coming to completion and ready for training that was talked about in the previous hearing. It is question—the AF–8, the 8 delivered to the United States Air Force, should be delivered to Eglin some time in the fall and we'll be ready for training and the facilities are there and ready to go.

Follow-on bases are in the line. MILCON for new mission, MILCON is established out there as we move into the next bases. But right now Eglin—Edwards, testing; Nellis, operational testing; and then Eglin. And the MILCON is well on track, sir.

General ROBLING. Sir, we're on the same track as the Air Force. We'll do our joint training down at Eglin initially with the Air Force and with the Navy. Our MILCON, our manpower, our support assets are all very closely integrated. The MILCON for Yuma is either on contract now or just completing contract for all the hangar facilities we need in Yuma, and then we'll—and the EIS processes are complete. We'll do the same for Beaufort, South Carolina, and the other bases as we march away across.

But we have a very tight transition task force that looks at every one of these issues, and right now we're on track.

Senator BROWN. Thank you, sir.

Senator LIEBERMAN. Thanks, Senator Brown.

Let me go to initial operating capability. Correct me if I'm wrong. I believe the Marine Corps has an IOC of 2012 for the F–35B. Last year the Air Force and the Navy moved their IOCs forward—or backward, I guess some might say—to 2016. I wanted to ask you, because of the concerns now about additional delay in the Joint Strike Fighter, and there's a lot of concern that the numbers may slip again when the defense acquisition board completes its realignment program, what—and I'd start with you, General Robling. Is the Marine Corps still sticking to the 2012 IOC date?

General ROBLING. No, sir, and thank you for that question. I think we waited on the 2012 IOC date to change it until we had to, the requirement coming up in documentation. But certainly, with this period of scrutiny and looking at the aircraft and the reduced ramp, we're going to slide. I think what we've decided to do now is not set an IOC date certain, but set a window out there. Of course, we're looking, with a 2-year slide, a slide at least 2 years, probably somewhere in 2014 or 2015 timeframe. And it will be event-driven.

Senator LIEBERMAN. It will be event-driven. Okay, I appreciate your sharing that with us.

Air Force and Navy, still at the same 2016 IOC date?

General CARLISLE. Sir, that is the current date with the slip of the program. We anticipate the same thing as the Marine Corps. We will probably slide to the right. 2 years is probably a good estimate. And just like the Marines and the Navy, it'll be event-driven based on how the airplane's developing, tactics, and the OT&E on the airplane.

Senator LIEBERMAN. Right.

Admiral?

Admiral PHILMAN. The same, sir. The 2016 date we feel is no longer valid, so it will slide some to the right. So again, event-driven, where we have a squadron, we have training facilities, we have hangar facilities and all those things, as well as the logistics pipeline to support those aircraft. Then once all those are satisfied, the CNO can declare IOC.

Senator LIEBERMAN. Okay. It's really unfortunate that we've had to do that, but there's nothing you can do about that except react to the reality of the program developments.

I want to ask you a series of questions about how we're coping with those delays. But the first one is whether you've thought about the possibility of deploying variants of the Joint Strike Fighter to theater even if they don't have all the capabilities that you want. In other words, would your combatant commanders—I'm asking, I guess, if there's any consideration, whether combatant commanders ask for or whether they'd actually in some sense allow the deployment to theater of aircraft that don't have all the capabilities, but still—as you know, we've followed the Joint STARS program and that's a case where it was deployed to theater before it had all the capabilities, all the testing, because it was needed.

Have you thought about that at all, General Carlisle?

General CARLISLE. Yes, sir, we have. As a matter of fact, as we looked at our schedule and the Air Force's decision to declare IOC when we get Block 3 software and hardware in the airplane the

operational test and evaluation is done for that—in fact, when we look at our current schedule, we will have a number—and the specific number, it kind of depends on how things go over the next few years. But we'll have a number probably on the order of 100 airplanes delivered to operational units before we declare initial operational capability, because of the way we're going to bed down the airplane.

Clearly, although we may not declare IOC, we will be training, we'll be doing the tactics, techniques, and procedures with the Block 2 Bravo, which will be the airplane that will be initially delivered. And if a combatant commander—we know what capabilities we will train. We'll have the logistics system, we'll have the maintainers. And if the combatant commander said, we need this capability, then we would clearly provide it. I think that's probably a universal approach.

Senator LIEBERMAN. Yes. That's interesting. Obviously, you wouldn't do it if you had any safety concerns, but you'd do it if you felt it added value, to use a generic term; right?

General CARLISLE. Exactly, sir. And again, I think when you look at the capabilities this airplane's going to bring to the fight, there is a lot of capability even in the Block 2 airplanes that is very impressive. Again, depending on the environment and the combatant commander that was requesting it, then we would, with all the safety considerations, be ready to go.

Senator LIEBERMAN. Right.

General.

General ROBLING. Yes, sir. In fact, I think one of the reasons why the Marines are a little bit earlier than the Air Force and the Navy is that we've decided to IOC with Block 2B. The reason we've decided to do that is because it gives us at least legacy or better capability, really better than legacy, with the very low observable aircraft. So our IOC is a little bit earlier because we're accepting those in 2B. But like General Carlisle, we'll have—for us it will be in excess of about 50-plus aircraft at that time, that we will be training toward.

And once 2B—and again, that's software and hardware- dependent. That's the event-driven I was talking about. Once that's certified, we'll IOC. And of course, along with IOC is the capability to deploy.

Senator LIEBERMAN. Admiral?

Admiral PHILMAN. Mr. Chairman, just like the Air Force, we're going to be IOCing with the Block 3 software and the hardware installed and the training complete. We probably won't have as many numbers of aircraft as the Air Force or the Marine Corps at that point. But once that has been achieved, I don't see any reason why it wouldn't be able to be called to go into theater, assuming all the safety considerations have been taken into account.

Senator LIEBERMAN. There's a certain way in this context in which the term "IOC" is misleading. It suggests that until you hit the IOC date that the system doesn't work, and that's not really the reality.

General CARLISLE. No, sir, it's not. Mr. Chairman, to be perfectly frank, in a lot of cases if you delay IOC you can maintain pressure

on a contractor to deliver the product that you want and to continue to develop it.

Senator LIEBERMAN. Yes.

General CARLISLE. That does give you ability to keep the delivery coming and the pace of the upgrade that you need to get to the capability you want.

Senator LIEBERMAN. Makes sense.

Let me go quickly now to the service—another way you're dealing with this delay in the Joint Strike Fighter, with the service life—what is the "E"—extension program, SLEP. Last year we directed the Navy to conduct a cost-benefit analysis of the differences between F–18 new procurement and the F–18 service life extension program. The report arrived just last night, so I haven't personally had a chance to look at it.

Admiral, could you give us a highlight of what the report concludes?

Admiral PHILMAN. Mr. Chairman, with a great deal of analysis from the folks at Pax River and the people from Boeing, we looked at six different courses of action, from procuring only new F–18 Es and Fs, to a combination of SLEP and procurement, to only SLEP, as many as 280 aircraft. The findings really came down to pretty much what we've offered interest POM '12 submission. If we continue to procure in the numbers that we're looking at, 50—those 41 plus 9 aircraft, Es and Fs—and if we have a good population of 150 to SLEP, service life extension, then that is the best balance to get us to—to bridge us to the fifth generation fighter.

So we didn't predetermine the answer, I don't think, but that report is pretty thorough and, given the six different options, the option that was selected as the most attractive is the so-called option 2, which is just as I described, sir.

Senator LIEBERMAN. I'll come back to that in my next round. Thank you.

Senator Brown.

Senator BROWN. Thank you, Mr. Chairman.

So the design and development efforts are not proving reliable, is what last June the Pentagon's chief independent weapons tester issued a memo stating. Then the Department issued direction that would measure and improve the reliability and maintainability of the newest weapons systems. If each one of you can independently comment as to how your programs—how are programs within each of your portfolios complying with that direction, and does additional work called for in this report still need to be done?

General CARLISLE. Senator, from the Air Force standpoint, we are clearly taking that to heart. I think part of the issues are it's early in the program. It was a good time to have that kind of study and review as we move forward. It has put more scrutiny and more emphasis on the completion of those test points. It has added test points. It has added rigor in some cases where there probably wasn't enough rigor in the program to create the positive results since then.

Actually, Terry and I were just down at Fort Worth. That scorecard of where they're moving on those test points as well as meeting those requirements is moving along at a very good pace and is actually a pretty good news story. There's few holdups still. The

helmet is one that we're continuing to work, and I'm sure you've heard about that. There's a dual path idea with the helmet now.

But with respect—and the Air Force is probably the airplane that's moving farthest ahead. The missions systems capability, the flying testbed, and the weapons performance are actually coming along at a very good pace, and the Air Force right now is continuing to keep pressure on it. But we're seeing great progress in that area.

Senator BROWN. Thank you.

Yes, sir?

General ROBLING. Yes, sir. I'm on the same track as the Air Force. Their problems were our problems, obviously. A lot of those software-driven, some hardware, but software because of the test points, we've increased those. I think before they were testing to these corner points to get to the outer edge of the envelope so we could move it along. I think since that time we've realized that you need to test inside of those corner points, and the more testing we've done, of course, it's added more reliability, and that will increase as we continue to test.

General ROBLING. Likewise, sir. And we are very pleased that we have two C model aircraft down there at Pax River now, so we can expand those envelopes and have those testing points returned from almost every flight. Admiral Vinlet has been very diligent about driving in, okay, this is the test plan that is needed for all three variants to meet his satisfaction that we're moving in the right direction. So I'm comfortable with that.

Senator BROWN. Thank you.

I know China, as I mentioned in my opening, has gotten a lot of press for its fighter development. And Russia, as we all know, has been exporting fighter aircraft and related technology for a long time now. What do you see as the pacing threat for military aviation? Is there any particular air force that worries us more than yesterday or in the future?

General Carlisle?

General CARLISLE. Sir, I think the rollout of the J–20, which is the PRC's attempt at a stealth fighter; and that we just recently had the second or third flight—the second aircraft show up of the PAC–FA, which is a joint Russian and Indian attempt at a stealth fighter. Those are discouraging in that they rolled out in a time that we thought there was maybe a little bit more time, although we were unsure of that. I think the thing that we think about is the fact that we have had a technological advantage against our adversaries in and, given the world that we're in today and the informational age and the interdependency, over time I believe we'll still maintain an advantage. I think our advantage will be a shorter period of time.

We've had a stealth advantage. The F–117 flew in the early 1980s, late 1970s actually, is when we first developed that. So we've had a stealth advantage over our adversaries for a long time. I don't see us maintaining an advantage for as long because I think people will continue, other nations will continue, to try to gain that technology. There will be different avenues for them to do that, and they'll try to replicate in a lot of ways.

So I think—and the Russians produce a very good fighter aircraft and the PRC produces a very good fighter aircraft, and they will continue to develop that. And I think, again, as Terry, we were both in the Pacific together, and you need only look across the Pacific and see what the PRC is doing with respect to not just their air force capability, but their surface to air capability, their ballistic missile capability, their anti-ship ballistic missiles, their Woo-13 that has the range to get to Guam, as well as missiles that can get to Codinha. All of those things are incredibly disturbing to us for the future.

Again, as Terry said, we need not only to be able to defeat those, we have to hold those targets at risk. And that's where these fifth generation aircraft come in.

Senator BROWN. I'm going to submit some questions four the record. I'm not quite there yet. But I'd like to see, based on your observation of those, the Indian-PRC joint effort, what your assessment is of it.

General CARLISLE. Sir, I think for both the J–20 and the PAC–FA, I believe that they'll get there. There's no doubt in my mind that over time the technology will get there. I will say, though, in an effort not to make anybody 10 feet tall or to give them artificially great capability, it's not easy. These things are hard to develop. These airplanes are not easy. We see it—we saw it in the B–2, the F–22, the F–35.

As you look at even the initial rollout of both the J–20 and the PAC–FA, they're certainly getting there, but there are some things that a practiced eye that's been doing this for a long time can look at them and go: Well, you know, they probably don't have that exactly right.

And then to produce these, again, it's not easy. It's going to take some work for them to get there.

Senator BROWN. General, I'm presuming you're similar in terms of your commentary?

General ROBLING. Yes, sir. When that rolled out we had the same assessment. You can look at the aircraft and tell how far they've gone in design and what their capabilities are, and it's advanced. But to get to the crux of really your question on the pacing and what's keeping us ahead right now, I think the Joint Strike Fighter and its capabilities will do that. If that's in jeopardy, then that pacing is in jeopardy.

Senator BROWN. So what keeps you all—Admiral, let's start with you. What keeps you up at night in terms of as you're guiding the committee in our thoughts and thinking through force structure, in terms of acquisition quantities and the timing of acquiring new systems? Is there anything in particular that keeps you up at night?

Admiral PHILMAN. The China scenario is first and foremost, I believe, because they seem to be more advanced and have the capability out there right now; and their ships at sea and their other anti-access capabilities. Their fighters, as was mentioned, that was just rolled out. The good news for us, I believe as was mentioned, there's over 1,000 hours on the F–35 series right now, which we are hard on ourselves, but that's a far leap ahead from the Chinese fighter that's flown three times.

So that's the good news story. But as was mentioned earlier, they will catch up. They understand. They're a smart and learning enemy, and if we don't keep our edge then we will be behind, or at least lose our advantage.

Senator BROWN. They're not our enemy, but you mean the other country in terms of what they're capable of, you mean, right?

Admiral PHILMAN. Yes, sir.

Senator LIEBERMAN. Thank you, Senator Brown. We'll do one more round.

General Robling and Admiral Philman, in your prepared testimony you mention that the Department of the Navy has taken a number of steps to deal with the situation you face. We talked about that a little more in terms earlier, in terms of the reduction in the estimated shortfall. I know you've taken steps to reduce requirements or essentially reduce the demand for the aircraft. You also reduced the size of some of the deploying squadrons.

What I wanted to ask you about was a concept that I know you've also implemented called "productive ratio." Why don't you tell the committee for the record, what is "productive ratio"? Admiral?

Admiral PHILMAN. Sir, the productive ratio is a method of allowing the squadrons' so-called entitlement of aircraft as they proceed thorough the training process. If you go from the very—between deployments, a squadron will do unit-level training, which goes from basic training, then to integrated and more advanced training before they deploy. So as those squadrons are building up in that training cycle, they don't need 12 aircraft every day to conduct the kind of squadron business they need to do.

So we can take aircraft out, run them through the depot-level maintenance and other things that need to be done to the aircraft, so that particular squadron may only have six or eight aircraft. As you progress along on the training pipeline, you get more and more aircraft until you have your full complement upon deployment.

So it's a term that's a little bit misunderstood, but it's a method of controlling the number of aircraft to be on the flight line and stretching out the life of the whole fleet in order to not only meet our commitments overseas, but to meet our commitments in training as well.

Senator LIEBERMAN. So I think it's very creative. Would you say that's reducing demand or increasing supply by better utilizing the aircraft?

Admiral PHILMAN. Almost both, sir. You're reducing the demand early on in the phase. And if we're able to get those aircraft into the repair facility faster, which we also—as was mentioned earlier by General Robling—the throughput in those repair facilities, make it faster and more efficient, then we can also increase the supply at the other end.

Senator LIEBERMAN. It sounds like, though we don't like the circumstances we're in with the delays in the production of the aircraft you need to meet your needs and the Nation's need, that this is perhaps, would you say, one of those cases where necessity has been the mother of invention?

Admiral PHILMAN. Absolutely, sir. You would love to have a full complement of aircraft everyday, 24–7. But that's just not the case.

So being ingenious or uncanny about it, so how do we make sure we have aircraft to do the Nation's business when we deploy? So making all these different techniques, sometimes reducing the number of aircraft and squadrons, scheduling those aircraft in a way that makes most sense for a particular training mission.

We know more now about how to measure fatigue life expenditure. So in a particular—a young pilot like yourself goes out and there's a certain training mission, so—

Senator LIEBERMAN. I appreciate that very much. Senator Brown snickered, but that will not be in the record. [Laughter.]

Admiral PHILMAN. But for a particular training mission, we can match that pilot and that air crew with a particular number or tail number that makes most sense, so to not only everything the training done, but also preserve the life of the aircraft.

Senator LIEBERMAN. General Carlisle, is the Air Force taking similar steps to what we've called productive ratio to help reduce the demand for aircraft, if I can use that term?

General CARLISLE. Sir, I wouldn't say we have the exact same concept. I think the CONOPS, the concept of employment, is different, given the way that the Navy spins up and goes aboard a carrier and then deploys. We clearly have a little bit different approach to it. So we are optimizing the use of our aircraft. We are looking hard at how to get the most training out of every single sortie that we fly with, to include—although there's no tanker capability because that's all deployed, but to try to get as much training as possible out of it.

The other part that we're looking hard into is the live, virtual, constructive with respect to the simulation and modeling that we can do in training as well. But the optimum use of the aircraft is clearly something that we're looking at. We haven't really gone to moving tails between different squadrons yet, sir, no.

Senator LIEBERMAN. I hope you will keep us posted on that.

In your testimony, General Carlisle, both written and presented here today, you've described the Air Force's investigation into ways to extend the service life of A–10s, F–15s, and F–16s to help mitigate this gap between requirements and aircraft. I want to focus on one sentence which I read in my opening statement, where you say in your prepared testimony, "Actions to extend and modernize the legacy fleet are a bridge to fifth generation capabilities and are not considered replacement actions."

So what I wanted to ask you, and it's relevant, and I'll come back to the FA–18s as well: Are you still conceiving of a TACAIR inventory fleet that is totally fifth generation? In other words, if you're investing in these various programs—in this case, service life extension—do we need the full JSF fifth generation fleet?

General CARLISLE. Sir, our current analysis, we're moving towards a fifth generation fleet. But, having said that, I think we will continue to analyze the requirements based on the comprehensive strategic review, the National security strategy, and the National military strategy as we go forward in the future.

As we transition the F–35's, the intent is to replace our F–16s and our A–10s and eventually the F–15Es. Those other three airplanes, the F–16, the A–10, and the F–15E, will last well into the 2020s and even later. So as we transition, the time to make that

decision of whether we even extend those airplanes farther, that will be something we'll look at over time.

Our intent now is to procure the F–35 at the numbers that we talked about and then to enhance the capability of the legacy fleet so that we can get into the mid to late 2020s, and then we'll assess as we go on. Again, I think, as we've all seen, our ability to predict the future and what the world's going to look like a decade out is not very good. So we have the option to continue to look at those things as time goes on.

Senator LIEBERMAN. Okay. So I'm hearing you to say that, obviously, the goal has been to go to the full fifth generation fleet with the Joint Strike Fighter, but you're extending the lives of some of these other tactical aircraft; that, obviously, you'll continue to use them so long as they're able to be used reasonably.

General CARLISLE. Most definitely, sir. And I will tell you, there are great capabilities in those airplanes. All three of those aircraft—the F–16, the F–15, particularly the E model and the C model, and the A–10—are all great airplanes. The modernization we're doing to those airplanes makes them very viable into the future, especially if you pair those with fifth generation fighters.

If you pair F–15s with F–22s and F–35s, you now have the ability to open an anti-access area and allow those airplanes to get in and do work and then come back out, with again the protection of a fifth generation fighter. So what we've all discovered is, with the F–22 and the F–35 coming on, those airplanes give added capability to the fourth generation airplanes as well.

Senator LIEBERMAN. That's a very important point and I appreciate your answer, that the fifth generation aircraft can go in first and essentially clear the field, to the extent that they're able, and make it possible then for the fourth generation to follow on.

General CARLISLE. Yes, sir, most definitely. And that is in fact how we all operate. We operate that way today.

Senator LIEBERMAN. Right. The same for the Marines and the Navy. In other words, you're buying some new aircraft, you're extending the lives of the existing F–18. The new ones will be—their service life, how long? We've got a lot of years ahead of us.

General ROBLING. Well, the service life for JSF is an 8,000-hour aircraft, compared to some of the legacy ones that were 6,000 hours, and then trying to get them through SLEP. It took a lot of money to do that. Bringing up legacy aircraft to the increased capabilities that we need, I think for all three of us it's really—we fight in a joint environment now and we're all joint enablers. So if you don't advance those legacy aircraft, you don't become part of the joint force that's able to fight in that arena. I think that's why we've asked for that additional funding.

Senator LIEBERMAN. Admiral?

Admiral PHILMAN. Mr. Chairman, in the case of the Navy, we have the legacy F–18s that we will extend the life. But we also have the late-model F–18Es and F's, with the very capable radars and all the other systems which are requisite—resident in the aircraft.

So as we get farther into the future and certainly into the 20s, we have a population on the flight deck of the aircraft carriers of

very advanced F–35C's, we have the F- 18E's and F's, which are complemented by the jamming version, the G model.

So, no, we're not going to be full-in all fifth generation fighters. But we have a nice array of capabilities: the first day of the war, F–35s that can fight in the joint environment with our Air Force and Marine Corps brethren; and then the F–18's of various lots that can follow on and do other good business.

Senator LIEBERMAN. So again, the goal—I think there was some contemplation that we were heading as rapidly as we could to all-fifth generation fleets. But for various reasons, including the delay in the Joint Strike Fighter program, we're now extending the life of fourth generation planes and acquiring some, as in the FA–18E and F's. Therefore, for the foreseeable future I take it it's fair to say that we're going to have a mix and we're going to keep the fourth generation going as long as they can effectively go.

Thank you.

Senator BROWN.

Senator BROWN. Thank you, Mr. Chairman. This will be my last round. I have some other commitments I need to get to. But I'm going to submit additional questions for the record.

General Carlisle and General Robling: First of all, General Carlisle, the numbers that you're providing, are those also Guard and Reserve aircraft as well included in that total number?

General CARLISLE. Yes, sir. That's total aircraft inventory.

Senator BROWN. When you go to this next generation, are a lot of those going to trickle down to the Guard and Reserves, the older aircraft?

General CARLISLE. Sir, it'll be both. We will—there will be——

Senator BROWN. Integrated with everything?

General CARLISLE. The legacy airplanes that are modernized in SLEP'ed will flow down, as well as new JSFs will also. So it's going to be a mix, as it is in the active. We'll have a mix of the fifth and fourth and then the Guard and Reserve will have a mix of fifth and fourth, yes, sir.

Senator BROWN. With regard to the Osprey, has that program proceeded according to plan? That would be for both generals.

General CARLISLE. Sir, the CV–22, the AFSOC variant for the United States Air Force, obviously we had some growing pains with that airplane. I will tell you that its deployments to the AOR, its work in Libya and other areas—and it is in Afghanistan today—has been tremendous. The airplane has performed extremely well.

Senator BROWN. It has a very high cost per flying hour, though, right?

General CARLISLE. Given the capability it brings to the fight and what it's used for, sir, I think that we're continuing to try to drive those costs down. They're probably higher than we would have expected. I don't think we in the Air Force consider them outrageous by any stretch of the imagination.

General ROBLING. In the Marine Corps, the MV–22 is progressing on track and doing very well. It's passed 100,000 hours combined with the Air Force and the Marine version. It is our safest tactical helicopter in the last 10 years as far as safety records. We've gotten the cost per flight hour from 11,000 down through 10,000. We're hoping to get it down in the 9,000s. But

quite frankly, it's the lowest cost per seat per mile of any of our tactical helicopters. What that means if you compare this helicopter to, say, the CH–46 that it replaced, somewhere around a little over $4,000 a flight hour, it doesn't really equate because you would have to use two of those aircraft to get the same, to get the amount of marines that you needed to a farther distance.

So I think in those terms this is becoming—it was an aircraft that started out high. We found efficiencies. We're getting it down to a reasonable range. I think it's the aircraft that the Nation needs for its Marine Corps.

Senator BROWN. Just to kind of get a bigger picture, a question. With the major design of the Joint Strike Fighter at least theoretically done today, we have no new fighters under development in this country. We also have no cargo aircraft under development and aside from the KC–46, no tankers under development. I don't know what the last time that this was true.

The F–22 and C–17 lines are getting ready to close and the F–15 line is at very minimal rates. I'm not sure if this is a natural consequence of the defense industry consolidations over the last decade or if it's a cyclical situation. But to what extent—I guess, Admiral, we don't want you to feel left out. To what extent does this development concern you at all?

Then, getting back to General Carlisle, does the Air Force have a notion of what minimum capabilities or surge capacities it would like maintained in the industry?

Admiral PHILMAN. Your point is exactly right, sir. Right now, with the Joint Strike Fighter there is still work to be done. There is work for good engineers to have on that aircraft and other follow-on aircraft.

The only follow-on aircraft programs that would fit our answer to your question are our unmanned systems. Right now, in the Navy we have the Navy Unmanned Carrier Demonstration, which is going to demonstrate flight, takeoff and recovery aboard an aircraft carrier, as well as some airborne tanking in and around the aircraft carrier.

But then there's another concept called the UCLAS, the Unmanned Carrier-Launched Air Strike System, which should be demonstrating in around the 2018 timeframe. It will have more of a fighter-like—the mold line isn't defined just yet, whether it's a wing and tail design or if it's tailless, more of a flying chip, much like the B–2. We don't know that yet.

But those kinds of designs and concepts, which will be complementary, unmanned systems that will be complementary to our manned fighters, are good work to be done, and I think it's pretty exciting for the future of both naval and Air Force aviation.

General ROBLING. Sir, let me. You said it as a matter of consequence, and I don't think that's the case. I think all of us—and I use the example of the Marine Corps, but this was a well thought out, methodical drawdown to minimum type-model-series, and getting right down to the end of the life of the aircraft that the Nation gave us. In our case, where we necked down to three type-model-series, to the JSF, using the initial JSF costs, we were going to save a billion dollars a year in O and S costs by coming down to a single type-model-series for those.

So timing is everything and our timing is bad now, at a time when our Nation's in fiscal austerity. So I think we thought through this and now we're faced with this higher cost aircraft than we originally looked at and the cost is significantly higher than we thought it would be.

Senator BROWN. General Carlisle, in terms of the next generation bomber, what's the Air Force's role in defining the new long-range strike platform? Will this be a joint program, Air Force-led, or some other type of structure?

General CARLISLE. Sir, it's an Air Force program. We're working closely with OSD, and our goal in this program is affordability, is trying to drive that in at the outset. We're going to use existing technologies as we develop that airplane, so we're not going to put ourselves in too high of a technology expectation. And again, we'll continue to work with what currently is out there.

Our intent on that program is again to develop that by the mid-2020s, to have the long-range strike platform that can either be manned or unmanned, will also have the ability to have a standoff weapon that will go with that, to again add more capability, and clearly it'll be a stealthy aircraft for the future.

So with respect to industrial base, I think the next long-range strike is a big part of that. The KC–46 is part of that. The JSF as it continues to mature is part of that as well. But industrial base is important. We definitely believe that, sir.

Senator BROWN. Thank you, Mr. Chairman, for holding this hearing.

Senator LIEBERMAN. Thanks, Senator Brown.

Thanks, gentlemen. I think we've had a good exchange. I appreciate the directness of your answers and your testimony. Thanks for what you're doing every day. It just says the obvious, that in these resource-constrained times, to speak more in normal language, economic difficulties, and increasing deficit-debt realities for the Federal Government, we're going to really be fighting for every dollar we can get.

I noticed Secretary Gates made a statement yesterday, I think at Notre Dame at a commencement address, that we have to be careful not to just come up with numbers out of the air that we use to cut our defense budget, because it's so critical to our constitutional responsibilities. On the other hand, in the position that the three of you are in it means that you are under greater pressure than ever to operate the programs that are in your responsibility areas effectively, and to squeeze out of the system as much waste as you possibly can.

So some of the things you've done I appreciate to get to where we are. And of course, then we have to make sure that the contractors produce really extraordinary programs like the Joint Strike Fighter more quickly and hopefully at less inflation and expense.

But I really thank you for the testimony. It's going to help us as we go forward to our markup for fiscal year 2012. We'll keep the record of the hearing open for a week for any additional questions or statements. With that and thanks to Senator Brown, the hearing is adjourned.

[Whereupon, at 3:52 p.m., the subcommittee adjourned.]