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[H.A.S.C. No. 112–77]

UPDATE ON KC–46A AND LEGACY AERIAL REFUELING AIRCRAFT PROGRAMS

HEARING

BEFORE THE

SUBCOMMITTEE ON SEAPOWER AND PROJECTION FORCES

OF THE

COMMITTEE ON ARMED SERVICES
HOUSE OF REPRESENTATIVES

ONE HUNDRED TWELFTH CONGRESS

FIRST SESSION

HEARING HELD
OCTOBER 13, 2011

U.S. GOVERNMENT PRINTING OFFICE

71–448 WASHINGTON : 2012

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UPDATE ON KC–46A AND LEGACY AERIAL REFUELING AIRCRAFT PROGRAMS

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ARMED SERVICES,
SUBCOMMITTEE ON SEAPOWER AND PROJECTION FORCES,
Washington, DC, Thursday, October 13, 2011.

The subcommittee met, pursuant to call, at 1:03 p.m. in room 2212, Rayburn House Office Building, Hon. W. Todd Akin (chairman of the subcommittee) presiding.

OPENING STATEMENT OF HON. W. TODD AKIN, A REPRESENTATIVE FROM MISSOURI, CHAIRMAN, SUBCOMMITTEE ON SEAPOWER AND PROJECTION FORCES

Mr. AKIN. The hearing will come to order and if it is all right with people, I am going to start it with a prayer.

Heavenly Father, we thank you for this day, for a free country. We ask your blessings on our deliberation, our leadership. Watch over our people who serve us overseas, the people in uniform. And I pray in Jesus' name, amen.

Okay. We have got the Air Force tanker hearing. I have got some fairly brief opening remarks. I believe the ranking member has some remarks. I hope they are brief. And we are talking about potentially a vote at like 1:30, or something like that. So we are going to try and roll the best we can and then pop back in.

So we are going to be hearing testimony from the Department of Defense acquisition officials regarding the Air Force's new tanker program, the KC–46, and to receive an update on current tanker aircraft, KC–135 and the KC–10. We intend to provide sufficient, but not overly burdensome oversight, of this program, and hope that this will go into the record books as an acquisition model of success.

Today we have with us Mr. Shay Assad. He is the Director of Defense Acquisition Policy and Strategic Sourcing. We have Dave Van Buren, the Air Force's Service Acquisition Executive. Major General Bruce Litchfield, Special Assistant to the Commander of the Air Force Materiel Command. And Major General (Select) Chris Bogdan, a Program Executive Officer for the KC–46 program.

Thank you all, gentlemen.

During the hearing, we hope to gain a better understanding of the KC–46 program, the program risks that have been identified, and the oversight mechanisms in place to keep the program on track. And we will appreciate the need for this new tanker as we hear testimony regarding our aging, but still capable, fleet of legacy tankers, and the dedicated airmen that keep them flying.

Finally, we would like to gain an understanding of the KC–46 program impacts as budget deliberations for the future continue to take center stage and remain uncertain.

With that, I turn to the ranking member of the subcommittee, Mr. McIntyre, for any comments that you would like to make, sir.

[The prepared statement of Mr. Akin can be found in the Appendix on page 21.]

STATEMENT OF HON. MIKE MCINTYRE, A REPRESENTATIVE FROM NORTH CAROLINA, RANKING MEMBER, SUBCOMMITTEE ON SEAPOWER AND PROJECTION FORCES

Mr. MCINTYRE. Thank you, Mr. Chairman.

I would like to also thank the witnesses for appearing today.

The Air Force has waited too long, unfortunately, for a replacement for the KC–135, when we think about it being an aircraft with an average age of nearly 50 years.

In our current environment of constrained budgets, it is absolutely critical we get the KC–46 acquisition process on a stable track and on a schedule that is realistic and will not lead to costly delays. The Air Force recently completed an integrated baseline review, and I am interested in hearing from the witnesses about any risks that were identified in that process.

Recent press reports have estimated the KC–46 program will experience cost overruns of more than $300 million. We need to clear that up.

I would like us to better understand today how much of these overruns the Government would be liable for, and what measures are being taken to prevent any further cost overruns. If you will please address that.

As we wait for the KC–46 to come online, I am concerned with the viability of our current legacy aerial refueling fleet. Their in-theater demand, as you well know, remains high. It appears that trend will continue in the near term.

I look forward to hearing from the witnesses on the condition of our current legacy fleet, and if you would please discuss their ability and capacity to meet the increased theater demand.

We all know and are very aware of the fiscal constraints that DOD [Department of Defense] is currently facing, and our full committee was hearing from the Secretary of Defense about that this morning in testimony. To the extent possible, it is important that we hear from you, our panel before us right now, what potential impacts you believe the Budget Control Act and possible concerns about it will have on the overall aerial refueling mission.

Thank you for your service to our country. Thank you, Mr. Chairman, for your prayer. Thank you for holding this important hearing today.

I yield back.

[The prepared statement of Mr. McIntyre can be found in the Appendix on page 23.]

Mr. AKIN. Thank you.

And I believe we are going to have just two opening statements; is that correct? I think David Van Buren, the Acquisition Executive, first; is that correct? And then also, then General Litchfield

is going to talk a little bit about where we are legacy-wise, and that sets up, of course, where we want to be going.

So David, it is good for me to put kind of a face on a name. I understand, I think of you as the parallel to Mr. Stackley, who does a good job, and I am sure you do very well, as well. So we would like to hear your testimony, sir.

STATEMENT OF DAVID M. VAN BUREN, AIR FORCE SERVICE ACQUISITION EXECUTIVE; MAJ GEN BRUCE LITCHFIELD, USAF, SPECIAL ASSISTANT TO COMMANDER, AIR FORCE MATERIEL COMMAND; MAJ GEN (SELECT) CHRISTOPHER C. BOGDAN, USAF, PROGRAM EXECUTIVE OFFICER, KC–46 TANKER MODERNIZATION DIRECTORATE; AND SHAY ASSAD, DIRECTOR, DEFENSE PROCUREMENT, ACQUISITION, POLICY AND STRATEGIC SOURCING, UNDER SECRETARY OF DEFENSE FOR ACQUISITION, TECHNOLOGY, AND LOGISTICS (USD AT&L)

STATEMENT OF DAVID M. VAN BUREN, AIR FORCE SERVICE ACQUISITION EXECUTIVE

Mr. VAN BUREN. Thank you, Mr. Chairman.

Chairman Akin, Ranking Member McIntyre, and distinguished members of the subcommittee, thank you for the opportunity to address this committee with an update on the status of our KC–135 and KC–10 fleets, and how the KC–46 program is progressing now almost 8 months after contract award.

The capitalizing of the tanker fleet remains the Air Force's acquisition priority. The Air Force awarded the Boeing Company an engineering, manufacturing and development contract for the KC–46 on February 24, 2011. Since contract award, the KC–46 team has worked with Boeing, the Federal Aviation Administration and many Department of Defense stakeholders to complete a comprehensive review of the KC–46 program.

We have baselined the cost schedule and technical performance and risks of the program. As we work toward the low rate initial production decision scheduled for late fiscal year 2015, we are confident that we can maintain the cost and schedule of this program, while mitigating the identified risks.

The Air Force remains mindful of our Nation's budgetary challenges and fiscal constraints. This environment requires that we balance our capabilities between current combat operations and the need to address emerging threats and future challenges.

We seek cost-effective systems that leverage existing capabilities and maximize interoperability and integration of legacy and future systems.

At this point in the development program, I am pleased both on the performance of the Air Force program office led by General Bogden, the PEO [Program Executive Officer], and by the program execution of the Boeing Company. I understand this subcommittee is looking for how potential sequestration will affect the tanker program.

As Congress implements the Budget Control Act of 2011, impacts to Air Force capabilities must be considered. Any reductions im-

posed by sequestration rules would deeply affect the Air Force's ability to perform its missions.

At this point, however, it is too early to determine the specific impacts to aerial refueling programs, because such cuts would require the Air Force to rebalance its entire portfolio programs. However, we do know that any mandated significant cuts to KC–46 program would have grave consequences for the program. Likewise fully funding the KC–46 program under sequestration would be at the expense of other programs.

We are committed to fielding the KC–X—KC–46 on time and on budget so the warfighter is properly supported in the future. In the meantime, the Air Force will continue to address new capabilities and upgrades needed for the legacy KC–135 and KC–10 tanker fleets to meet future air space mandates and emerging technologies, resolve critical obsolescence and diminishing resource issues, and maintain operational relevancy.

I appreciate the subcommittee's continued support for our Air Force tanker programs and we look forward to answering any questions you may have.

Thank you, Mr. Chairman.

[The joint prepared statement of Mr. Van Buren, General Litchfield, General Bogdan, and Mr. Assad can be found in the Appendix on page 24.]

Mr. AKIN. Thank you for your testimony, David.

And then, General Litchfield.

STATEMENT OF MAJ GEN BRUCE LITCHFIELD, USAF, SPECIAL ASSISTANT TO COMMANDER, AIR FORCE MATERIEL COMMAND

General LITCHFIELD. Thank you, Chairman Akin, Ranking Member McIntyre, and distinguished members of the subcommittee. I am pleased to be here to cover the status of our KC–135 and KC–10 fleets.

The Air Force tanker fleet remains the backbone of the Department of Defense's global power projection and global reach capabilities. This venerable fleet consists of 414 KC–135s and 59 KC–10 aircraft.

Executing the Tanker Modernization Plan will require sustaining the KC–135s to an average age of over 80 years and KC–10s past an average age of 54.

As such, both airframes will be in uncharted territory in terms of structural and systems issues attributed to age, obsolescence and diminishing manufacturing sources. We should expect keeping a fleet this long will result in greater demands on our airmen, higher sustainment costs and challenges to aircraft availability.

The tanker fleet is in high demand as we execute operations across the globe and across the full spectrum of military operations. Because of this demand, the Air Force is executing a set of multistage initiatives to keep these aircraft viable and relevant through a combination of sustainment and modification efforts.

KC–135 aircraft availability and mission capability rates have remained relatively steady over the last several years with aircraft availability near 65 percent and mission-capable rates near 80. For

the KC–10, the aircraft availability and mission-capable rates are 65 percent and 79 percent, respectively.

Our dedicated airmen around the world work hard every day to generate mission-ready aircraft. To sustain long-term fleet health, the tanker fleet receives routine depot maintenance and undergoes system modifications to address structural, systems and obsolescence concerns.

We are currently executing several initiatives to keep our tankers in compliance with today's Federal aviation standards. These include modernizing air traffic management and friend-or-foe identification systems, as well as remanufacturing obsolete parts.

Even with all the maintenance activities, sustainment actions and planned modifications, the preponderance of our legacy tanker fleet remains—retains the inherent design concepts birthed in the 1950s. With the planned service life of the KC–135s and the KC–10, the challenges of sustaining these aging weapon systems will rise until the KC–46 comes online. In the meantime, we will continue to execute our long-term sustainment plan for our legacy fleet to ensure we meet our Nation's aerial refueling needs.

I appreciate the subcommittee's continued support for our Air Force tanker programs. Again, thank you for the opportunity to appear before you to discuss this critical Air Force mission, and I look forward to answering your questions.

Mr. AKIN. Thank you very much, General.

I have a couple. First of all just on the—the intro, Mr. Van Buren. What are we looking at until we build the first aircraft? There is a series of steps. You are going to assemble an aircraft. We are going to be flying it, doing some testing on it. And then we expect maybe the first aircraft will be coming off of the line. What are the sort of dates timewise that you are looking at there?

Mr. VAN BUREN. Well, the contract that we currently have runs through 2016 for EMD [Engineering and Manufacturing Development]. We will have a preliminary design review in 2012, critical design review in 2013, build the aircraft, first flight of the 767–2C in 2014. And——

Mr. AKIN. So the first flight is 2014. Okay. And then?

Mr. VAN BUREN. Roughly 3 years from contract award. And then we will have the full-up KC–46 first flight at the end of 2014.

And General Bogdan, any other details with regard to our contract that you may want to add?

General BOGDAN. Yes, sir. Thank you.

Congressman, the only thing I would add to that is one of the unique aspects of the way Boeing is actually designing and developing the airplane is to blend both their commercial best practices and our defense best practices to design the airplane.

And one of the manifestations of that is the Boeing team is 50 percent from their commercial side of their business, and 50 percent from their defense side. And as they walk through the design of the airplane, they are using both the review process from their commercial side, as well as the review process from the defense side. And what I am happy to say about that is that the Air Force is involved in both sets of those steps, watching them design and develop the airplane.

So, what you may see on the master schedule is actually two preliminary design reviews and two critical design reviews to go with those two first flights. The first flight of the commercial derivative airplane and the first flight of the actual KC–46. The Air Force is involved in both sets of those reviews, which gives us early insight into the commercial portion of the airplane to ensure that the military's portion ends up correct.

Mr. AKIN. Well, that is encouraging to hear you say that. It is sort of a double check and balance then with your team. Now, just want to make sure I understand one thing.

You are in charge of this program; is that right?

General BOGDAN. Yes, sir.

Mr. AKIN. That is kind of encouraging, because sometimes we have groups that come in and address us, and it is not really clear who is really in charge of building this. In other words, you have the authority, but also you also have the responsibility to make sure this comes in on time and under budget.

General BOGDAN. Absolutely, sir. The buck stops with me and I report directly to Mr. Van Buren for the execution of this program.

Mr. AKIN. Directly to—okay. That makes sense. And so that is directly connected to——

Mr. VAN BUREN. The Under Secretary for Acquisition, Technology, and Logistics. Currently, Mr. Kendall is the acting Under Secretary.

Mr. AKIN. Okay. That is good. One of the—I used to work for IBM. And one of the things we always said was if you have got an important program then you have to make sure there is somebody in charge. So I am glad to hear that there was no equivocation on that particular point. And of course the other thing is, is that if things slip at all, you will have the distinct honor of being able to fly in antique airplanes, you know? Maybe that is not what you really want to do.

Just one other quick question from my memory. You have the KC—is it 35—is the large number 500d or some of them?

General LITCHFIELD. KC–135s.

Mr. AKIN. One thirty-five. And that is a smaller plane than the 10 [KC–10], right?

General LITCHFIELD. It is.

Mr. AKIN. What is the difference in the number of gallons or capacity, or however you measure it?

General LITCHFIELD. The KC–135 is roughly a 200,000-pound fuel capacity. I think the KC–10 is about 350 [350,000 pounds]. So about one-and-a-half times.

Mr. AKIN. And how does the 46 [KC–46] fall in that mix?

General BOGDAN. Sir, the KC–46 when fully loaded is going to be able to offload or carry 212,000 pounds of gas. It doesn't appear like that is a whole lot more than a 135 [KC–135]. However, a far more efficient airplane than the 135, so it is offload capability and its range capability far exceed the 135.

And we also have to remember that the KC–46 has also been built for a number of other missions, to include cargo-carrying capability. So it has a fully loaded cargo floor and it has built-in ability to carry air medical patients for air medical evacuation.

Mr. AKIN. So it is a little bit more a multipurpose aircraft. And there is a certain point of no return in carrying fuel, right? Because there are only a certain number of planes you are going to refill in a certain period of time, right? So you don't want to carry a lot of extra fuel you don't need?

General BOGDAN. That is true, sir. We prefer to offload all of our fuel and land at minimum fuel than have to land with extra fuel. More wear and tear on the airplane.

Mr. AKIN. Yes. Thank you very much.

And let us see. The next question to the ranking member, Mr. McIntyre.

Mr. MCINTYRE. Thank you, Mr. Chairman. I would like on the panel whoever feels most qualified to answer the question that I alluded to in my opening remark. What impacts will the Budget Control Act of 2011 enacted in July of this year have on the KC–46 program?

Mr. VAN BUREN. The exact impacts, sir, are not known yet. The issues of sequestration, as I mentioned in my opening comments, are not specifically identified by the Air Force, as of now.

However, I should say that one of the features of this particular acquisition, which in my mind is a model, is the manner in which we contracted for not only the engineering, manufacturing and development, but also on a firm fixed-price basis for the two—first two production lots and a not-to-exceed cap for the remaining production lots out for a large number of years, to the good work of Mr. Assad here, and others.

And so, that any perturbation to that business deal or the business transaction that has been set up would be, in my opinion, very negative for the taxpayer.

Mr. MCINTYRE. I also mentioned about the cost overruns, currently estimated at $300 million, roughly, above contract ceiling. Can you explain to us in simple terms whether or not the Government is exposed? And if it is not, then who is responsible for paying for those cost overruns above the ceiling?

Mr. ASSAD. Yes, sir. I think I can answer that. The Boeing company is completely responsible for all costs above the contract ceiling price. So the taxpayers will incur no further cost increase on this contract should the development program exceed the ceiling price of the contract.

Mr. MCINTYRE. Thank you. Thank you for clarifying that.

Thank you, Mr. Chairman.

Mr. AKIN. Mr. Coffman.

Mr. COFFMAN. Thank you, Mr. Chairman.

I am wondering, can you go back again and talk about the $300 million cost overrun? And where, since we are under a fixed-price contract, what are the ramifications of that?

Mr. ASSAD. Yes. The $300 million cost overrun that you are referring to, Congressman, was Boeing's present projection of where they think their costs are going to end up on the contract. They are trying to manage to a much lower number, but that is their projection. Our ceiling price, the price that the maximum liability to the taxpayer, is $4.9 billion.

So to the degree that Boeing executes this contract in any manner that causes them to exceed that cost number, it is on the com-

plete shoulders of the Boeing Corporation and not the taxpayer. So it is very straightforward. Anything over that $4.9 billion is Boeing's nickel, not ours.

Mr. COFFMAN. As it should be. I believe that Boeing is also in development using essentially the same design or a similar design for what they are—to develop this same aircraft commercially as a cargo plane, if I am correct in that?

Mr. ASSAD. They are, yes. They are using their first—as General Bogdan mentioned—they are developing the 767–C. They are using a lot of existing technology. So there is not a lot of risk in terms of understanding how to put that plane together.

Mr. COFFMAN. Oh, absolutely. But I think what I am saying is, essentially, they will be able to recover their cost, this cost overrun that they will eat, and not the U.S. taxpayers. But the fact that they are going to be able to utilize a lot of technology that they are developing for the U.S. Government, that they will be able to utilize certainly some of that same technology for, or commercially—a commercial aircraft. Am I correct in that?

Mr. ASSAD. Well, actually, most of the technology, if not all of it, is being brought to the table by Boeing. There are very few—there is some military modification to this aircraft that we are going to use that some—I guess they could take advantage of. But the fundamental plane is being brought to the table—that the elements of that plane—is being brought to the table by Boeing.

Mr. COFFMAN. But did——

Mr. ASSAD. There will be some benefit from the extra development that we are doing, but they are bringing a lot of that technology; for example, the 787 Dreamliner cockpit. That is already developed, designed and paid for by the Boeing Corporation.

Mr. COFFMAN. I see. And so that is not part—that is not a part of the cost for this. But the——

Mr. ASSAD. That is correct.

Mr. COFFMAN. Okay, okay.

Mr. Chairman, I yield back.

Mr. AKIN. Mr. Critz, where did—oh, okay. There you are.

Mr. CRITZ. Thank you, Mr. Chairman.

Looking at some information on the IBR [Integrated Baseline Review], obviously the risk assessments, cost is low because of the cap. That is pretty straightforward. They listed the risk assessment for the schedule to be moderate.

Could somebody explain why there is risk there?

General BOGDAN. Yes, sir.

Relative to the schedule on the contract, the requirement for Boeing is to deliver to the Air Force 18 fully ready to go to war on day one airplanes with all the support equipment, all the tech quarters, all of the training by August of 2017. That is the requirement in the contract. Boeing has set a baseline and attempting to deliver those 18 airplanes approximately 5 months earlier than that in March of 2017. That is their own internal timeline.

When my team baselined the program, we took a look at that overall schedule and the likelihood of Boeing meeting the March date and the likelihood of Boeing meeting the August 2017 date. We came to the conclusion that it is likely that Boeing will meet the August 2017 date, but there are about four things that we

needed to keep our eye on to make sure that they didn't go off the rails, which would definitely impact them meeting that scheduled date.

And let me enumerate those for you. The first thing that Boeing is doing a little differently on this airplane in terms of building it is, instead of building a basic commercial airplane on their production line at Everett, and then flying it down to Wichita and then taking it apart to put the military modifications on it, what they are doing is called inline provisioning. And that means that, as they build the airplane in Everett, they are going to build it with the wiring and the bundling and the fuel lines as if the military pieces were going to be fit on the line right there.

Let me give you an example. When Boeing builds the tail of a 767 for a commercial customer, the tail of that airplane does not have a hole in it to fit a boom. But for our airplane, when the tail section of that KC–46 or 767–2C gets to Everett, it will already have the hole in it for Boeing to put the boom on it.

So they are passing down through their sub-tier suppliers an additional requirement to build the airplane as if it were a military airplane, even though it is going to be put together on a commercial line. While Boeing does that quite often in their commercial airplanes, different variants, to do it on a military airplane with military requirements and specs, increases the level of risk for us in the Air Force of getting that done on time.

So I have let Boeing know, and I have put them on notice, that I think that that inline provisioning is something that they are going to have to pay particular attention to, and we, the Air Force, are going to have to pay particular attention to, to ensure that their sub-tier suppliers can do the job right. It is less a problem with Boeing integrating, and more of an issue of making sure that we watch Boeing watch their sub-tier suppliers for this inline provisioning.

So that is the first thing that worries me about the schedule, because if you don't get that right, you are not going to build your four test airplanes on time, and then everything propagates from there.

The second thing that worries me a little bit on the program relative to schedule is the fact that Boeing is going to deliver to us an airplane that is FAA [Federal Aviation Administration]-certified. There are two elements to that FAA certification. The first is what we call an amended type certification, and that certification goes with the 767–2C. The second part of the FAA certification is called a supplemental type certification, and that certification goes with the military modifications that they are going to put on the airplane.

It is very typical in the commercial world to do an ATC [Amended Type Certificate] certification and an STC [Supplemental Type Certificate] certification in serial. You do the ATC first. You put the military modifications on the airplane, and then you do the supplemental type cert. In this instance here, as a result of some of that inline provisioning, Boeing is actually going to do part of the ATC and the STC simultaneously. There is some concurrency there.

The issue I have with that is, if a problem arises during the FAA certification on the ATC side, there is not a whole lot of time for them to recover before they get to the supplemental type cert, the STC side. And I have to have that STC certification before I can deem the airplane airworthy to fly. So that concurrency of the ATC and the STC worries me a little bit.

We have been working with the FAA. The FAA has basically, in general, approved Boeing's process for doing this. The FAA doesn't have a problem with it. But we just have to make sure that the first time around, when they go to get that ATC certification there aren't too many hiccups, because that is going to propagate with that concurrency into the second part of that certification. So that is the second thing that I am a little bit worried about that causes some increased risk into the program.

Mr. CRITZ. Now, you said there were four. And I see we have already used up my 5 minutes. So if I could, if it is possible to get written response to that question, I would really appreciate it.

[The information referred to can be found in the Appendix on page 44.]

General BOGDAN. Yes, sir. And I apologize for being a little bit long.

Mr. CRITZ. Oh, that is quite all right. It is an important issue. Thank you.

And I yield back.

Mr. AKIN. And Mr. Bartlett is next.

Oh, and by the way, it may be if we move along in the questions, it may be we could catch some of the things offline, just depending on who has questions.

Mr. BARTLETT. All right. Thank you very much.

I noticed, both from your comparison chart and your spec sheet, that you are no longer waiving chemical and electromagnetic hardening, as we did during the Clinton years. Can you tell me to what level you are doing EMP [electromagnetic pulse] hardening?

General BOGDAN. Sir, currently, the military standard for EMP hardening for the KC–135 airplane is at a certain level, and for the KC–10 is at a certain level. The Department of Defense has undergone a rewriting of the standard, and the standard for us now has been slightly increased, although it is not at the same level as, for example, a presidential airplane. And that is in general terms.

So what I would like to do is, I will take that question for the record and get you the actual numbers, the decimals and all of that, engineering numbers, that go with that. But what I can tell you is, the airplane—we are not going to waive the EMP hardening. It has to meet the current mil [military] standard, and that will—that is going to provide us a more capable and more survivable airplane than we have in the current tanker fleet.

[The information referred to can be found in the Appendix on page 43.]

Mr. BARTLETT. The EMP Commission interviewed two Russian generals that told them that the Soviets had developed, and they had, an EMP-enhanced weapon that would produce 200 kilovolts per meter at the ground zero. And that would be, if it was detonated 300 miles high over Iowa or Nebraska, that would be about 100 kilovolts per meter at the margins of our country.

To my knowledge, that number is at least twice, and maybe more than twice, as large as anything that we have ever designed or built or tested to. How do we verify the level that we ought to be protecting to? The Department—the Pentagon—has a number. They have—and I don't know whether that number is classified or not—but it is substantially lower than the number that the Russian generals told the EMP Commission that they had enhanced the EMP weapons to produce.

General BOGDAN. I will just make a few quick comments about that, sir. The standards by which the Department of Defense sets the EMP levels for the airplanes are based on, as I know—understand it—a very detailed assessment of the threats.

Without getting into any classified information, we can provide you that process. And they look at the current and the future threats to determine that EMP level. Relative to our airplane, as again I said, one of the inherent capabilities of our airplane being a commercial derivative airplane is, every commercial airplane has to have a certain amount of hardening for lightening strikes.

And the FAA requires that and tests that during their ATC and STC certifications, as I talked about. So an added enhancement to our airplane is not only for the normal threat of EMP, but on top of that the FAA certification for things like lightening strike will be incorporated in our airplane. And I will get you the information about how we determine those levels.

[The information referred to can be found in the Appendix on page 43.]

Mr. BARTLETT. Yes. Lightening strikes are what is referred to as an E2. It is an E2 component of a nuclear detonation. The E1 has a rise time in nanoseconds. No lightning protection, as far as I know, provides any meaningful protection against E1. And airplanes probably are not so susceptible to E3, which is a really, really long wavelength that couples with railroad tracks and wires buried deeply under the ground, coupled with the E3.

I am concerned, because when we really need these planes in a war with a peer, it is in all of their open literature, it is in all of their war games. One of the first things they do is a robust EMP lay-down to deny us the use of all of our equipment which is not EMP hardened, which is far too much of our equipment. And I am concerned that if we are going to harden, hadn't we not ought to the level that we are told we should expect.

I will look forward to your written response to this. And if the level to which you are hardening is not at the level that was designated by the Russian generals to the EMP Commission, then I would like your suggestions as to why it should not be.

Thank you.

Mr. Chairman, I yield back.

Mr. AKIN. Thank you, Roscoe.

Our next is Mr. Courtney.

Mr. COURTNEY. Thank you, Mr. Chairman.

Mr. Van Buren, you were asked earlier about the Budget Control Act in terms of impact on the program. How about the C.R. [Continuing Resolution] last year in terms of the, you know, fits and starts and where we are today with the C.R.? And, you know, has that—it is—I mean, we are right now at R&D [Research and Devel-

opment] sort of level in terms of where the program is. And I am just sort of wondering if that had any sort of delay, interruption, cost?

Mr. VAN BUREN. The continuing resolution last year did not impact the program.

General Bogden, what is your assessment of this year?

General BOGDAN. Sir, we took a look at that. And if we were to go into a C.R. for the entire fiscal year 2012 year and maintain at the fiscal year 2011 levels, we would be $203 million short of what we would need to pay Boeing in their progress payments for work done on the EMD contract in fiscal year 2012.

Mr. COURTNEY. Okay. The numbers that we have here seems to suggest it was fairly level from 2011 to 2012. So there actually is a difference in terms of what you—the plan was for——

General BOGDAN. Yes, sir. When we originally put the budget in for 2012, it was long before we figured who was going to win this competition, because we hadn't chosen the winner. So we had to budget for either possibility that the other competitor of Boeing would win.

And if the other competitor would have won, we would have needed more money in 2012 than we would have for Boeing. And in this instance, because Boeing won, although 2012 and 2013 are leveled together, they are not equal, per se.

Mr. COURTNEY. Okay. Because the numbers that we have here——

General BOGDAN. And then, like I said, we went back, and based on Boeing's projected progress payments, which I have to validate, I have to take a look and make sure that they are really earning the money they claim they are earning with the work being completed. We will be about $200 million short on the progress payments for them.

Mr. COURTNEY. All right.

General BOGDAN. If we are at the 2011 level.

Mr. COURTNEY. That is helpful for us to know that.

General BOGDAN. Yes, sir.

Mr. COURTNEY. One last question.

General Litchfield, you talked about the operations that the tanker fleet has been involved in, in recent years. You know, looking at Libya where after the initial sort of salvo of ships and strike aircraft, I mean, our involvement tended to just sort of revert to refueling and recognizance.

Is that because the NATO [North Atlantic Treaty Organization] allies don't really have that capability? I mean, are we the only ones that really have refueling fleets of any size or significance?

General LITCHFIELD. I think size and significance is a fair statement. There are other countries that have air refueling capability, but we are really the joint and coalition and allied supplier of air refueling across our partners.

Mr. COURTNEY. So what percentage? I guess in terms of the operations of Libya, just an estimation?

General LITCHFIELD. I would have to get some specifics on——

Mr. COURTNEY. Okay.

General LITCHFIELD. I would have to take that one for the record.

[The information referred to can be found in the Appendix on page 43.]

Mr. COURTNEY. But it is significant, as you said?

General LITCHFIELD. Well, I think what is the real important thing is that our tankers are involved globally. You could say Libya, but I could say the same thing about the humanitarian operations in Japan when they were, after the tsunami and the nuclear incident, we were there.

I could talk to you about what we do on a daily basis for keeping the ISR [Intelligence, Surveillance, and Reconnaissance] for drug interdictions and all that. I could talk to you about getting our wounded warriors home when they need to get MEDEVAC [medical evacuation] from the AOR [Area of Responsibility] all the way to the (?), because minutes matter in terms of saving a life.

I think you could talk any operation you want any day, and our tankers are fully engaged in keeping—in support of their mission.

We can get the answer on Libya. But what I would really like to leave you with is there isn't a day go by that a 135 averages passing about 5 million pounds of fuel and supplying about 400-plus aircraft with refueling. And that is on a normal day.

Mr. COURTNEY. You don't have to, you know, spend your time, you know, chasing those numbers. But I guess the point is just that there really is no other ally that can sort of fill that hole if we don't get this program, you know, hitting all cylinders on time. So——

General LITCHFIELD. Yes, sir.

Mr. COURTNEY [continuing]. Thank you, Mr. Chairman.

Mr. AKIN. Thank you.

And next is Mr. Palazzo.

Mr. PALAZZO. Thank you, Mr. Chairman.

Thank the witnesses for being here today, and the service to—that you are providing to our country. Thank you.

Like many people, especially those along the Gulf Coast, we were kind of surprised about the KC–X award, but after reviewing the selection documents it pretty much came up to our—ultimately our satisfaction that the decisionmaking process was okay.

I do have a few questions that I would like to ask. I did have a question on the $300 million overrun, but that has already been asked and answered.

So just General Bogden—but anybody who wants to jump in, feel free—is according to some press reports, the FAA is proposing heightened scrutiny of the wing skin after cracks as large as half an inch were found on commercial 767s.

What impact will this have on the KC–46A program, and what measures has the Air Force taken to ensure that the tanker can meet the desired capabilities in the service line?

General BOGDAN. Sir, I am not sure if you are referring to the most recent airworthiness directive from the FAA about cracks that were recently found on some 767s. If you are talking about that one, what I can tell you is 183 of the oldest 767s in the commercial fleet today have older wing pylons on their airplanes. And it is those wing pylons that the FAA has sent out an airworthiness directive on just a few weeks ago for increased rate of inspection.

The reason why that won't affect us is because in 2005 the FAA actually found those wing cracks and sent out the original air-

worthiness directive. And that is why most of the 767 fleet today has the new pylons and was not affected by this most recent finding of cracks.

The design of our airplane has the new wing pylons from the 2005 airworthiness directive. So we are confident, relative to that particular incident, that our airplane will not meet the same fate.

One of the requirements, in a broader sense, one of the requirements we have on this contract is that Boeing has to prove to us during the design, development and testing phase of the program that this airplane is going to last for 40 years.

That includes a number of different engineering tests and analysis on the structures, the wings, the skin of the airplane. And the requirements to meet that 40-year lifecycle are not the commercial requirements. They are the military standard requirements, which go above and beyond in a number of instances from the commercial inventory.

So I am fairly confident that Boeing understands this. I am also fairly confident that our overseeing of Boeing developing and designing the airplane to the military standard for a 40-year lifecycle on the airplane is going to mitigate any problems we may see.

Mr. PALAZZO. And I have one more question, Mr. Chairman.

What impacts would sequestration, as a result of the potential outcome of the Joint Select Committee on Deficit Reduction, have on this program, the KC–46A?

General BOGDAN. As Mr. Van Buren and Mr. Assad had already spoken, I will say it in very simple terms. The EMD contract on this program is a fixed price contract. All 175 production airplanes have already been priced.

We know exactly how much we are going to pay for both EMD, and for every one of those airplanes. And we got a good deal.

If we were to remove money from this program of a significant amount that we would have to alter the development program or alter our production target quantities, there is a chance that we would have to renegotiate both of those contracts. And that would put in jeopardy a significant savings to the taxpayers.

Mr. PALAZZO. Mr. Chairman, I yield back.

Mr. AKIN. Thank you.

And last is Mrs. Davis. We have—there is a 15-minute vote and we are probably, what do you think, about 13 minutes into it or so, possibly?

Mrs. DAVIS. Thank you, Mr. Chairman. I will try and be quick. And thank you all for being here.

I just have a quick question to your last response. Wouldn't Boeing have assumed that they were building to military standards and not commercial; is that not a correct assumption?

General BOGDAN. During the proposal phase and during the source selection when we laid out our requirements, Boeing was well aware that the airplane had to meet the military standards for the 40-year lifecycle.

Mrs. DAVIS. Okay. Thank you.

Is there anything else besides what you suggested to the committee—and I may have missed this—that you learned from this process that informs future decisions? Because I think sometimes we, you know, we demonstrate that we have cut something and

that is fine. And I think we are obviously looking at, you know, a tremendous number of cuts. But there doesn't seem to be a real systemic change to the culture of doing that.

What did you learn that informs future decisions?

Mr. ASSAD. In this particular program, Congresswoman, what we learned was that we need to use the type of procurement practice that we used on KC–X on as many programs, frankly, as we can, but that requires firm requirements.

In this particular case, we spent a significant amount of time understanding from the warfighter exactly what their requirement was, so that the plane that rolled off the production line, in fact, can go to war from day one.

And so, in those instances where we can define our requirements in a firm way, we need to use this type of contract, you know? It is appropriate to use a fixed price contract when you have definitive requirement and that is where we want to be whenever we can be there.

Mrs. DAVIS. Is that—go ahead, sir. I am sorry.

General BOGDAN. Go ahead, ma'am.

Mrs. DAVIS. Would anyone be challenging you on that in the future?

Mr. ASSAD. Well, you know, there are those who never think a fixed price contract is the right type of a contract to use. And our view is, if the shoe fits on Cinderella's foot, she should wear it. And so, if a fixed price contract is appropriate, if the firm requirements are there and known and the risks are understood, it is an appropriate contract to use.

Mrs. DAVIS. Okay, thank you.

And I know that the—my understanding that the KC–46A will replace about 179 of the current 472 legacy tankers. So what about the others? What is the Air Force's plan to replace the others?

Mr. VAN BUREN. The baseline, Congresswoman, has always been for the so-called KC–Y and a KC–Z that would go on after the acquisition of the KC–X program. And the whole set of requirements and acquisition approach will be more than a decade out during the period of our procurement of the KC–X tankers.

Mrs. DAVIS. Okay.

Thank you, Mr. Chair.

Mr. AKIN. Thank you for everybody helping on keeping the questions pretty short. Two more people have come in.

Mr. Johnson, you are next. If you keep your questions to a couple minutes, that allows Mr. Larsen to ask one and we will still get to votes on time.

Mr. JOHNSON. Thank you. Thank you, Mr. Chairman.

Secretary Assad, I just heard you say that the as far as the KC–X and KC–Y programs, they would—you didn't say that they would replace the KC–135. You said they would go on after the KC–135. Which is the most accurate description?

Mr. ASSAD. I am sorry, I might not have been as clear as I wanted to be. The whole replacement of the KC–135 fleet and the KC–10 fleet will be conducted by a series of procurements, KC–X being the first one, then KC–Y and then KC–Z. So there are three programs that will go incrementally through the years to replace the current tanker fleets.

Mr. JOHNSON. So we will have three models that are replacing the current tanker fleet?

Mr. ASSAD. I would want to defer that until after the commander—mobility command—goes through and develops those requirements in the out-years.

Mr. JOHNSON. But we are, as it stands now, planning for three replacements?

Mr. ASSAD. Three procurements.

Mr. JOHNSON. Three procurements, all of which would replace the program that is in place now with just the one aircraft?

Mr. ASSAD. They would replace the current legacy fleet of KC–135 and KC–10.

Mr. JOHNSON. Looking ahead at the mix of aircraft our Air Force would be using in 20 or 30 years, is it possible that we won't need to spend billions of taxpayers' money on a new heavy tanker if we could accomplish our objective with the KC–46?

Mr. ASSAD. That is entirely possible.

Mr. JOHNSON. I have no further questions.

I will yield back. Thank you.

Mr. AKIN. Thank you.

And our last question goes to Mr. Larsen.

Mr. LARSEN. Thank you.

Most of the gentlemen I have heard from you at one time or the other about this program, so my only concern is, and the only comment—it is really more of a comment. Just given the news of the summer and the conversations that took place in the media about the development phase of this, that we would be sure that here you stick to your contract and you make sure that the contractor sticks to the contract. And that the taxpayers aren't on the hook for anything but what is in the contract. That is the main point I want to make.

Mr. VAN BUREN. That is our intent, sir. And that is the reason why we have very stringent controls with regard to constructive change to the contract, both at General Bogdan's level and at my level.

Mr. ASSAD. And in addition, Representative, that is why, frankly, we are, we have and we will continue OSD [Office of the Secretary of Defense] oversight to ensure that that happens.

Mr. LARSEN. Yes, from OSD, not just from Air Force.

Mr. ASSAD. That is correct, Congressman.

Mr. LARSEN. And we will continue congressional oversight on you all.

Thanks a lot.

Mr. AKIN. Congressman Larsen, thank you.

I just want to thank you all for being here. We just wanted a quick update on how the program was going. I think you did a great job and I wish you the very best on it. Make it the very best program ever.

And so, we will stay tuned and thanks for taking the time with us. I am glad we got the questions done, so we do not have to wait and come back for anything.

So, God bless you, have a great day.

[Whereupon, at 1:53 p.m., the subcommittee was adjourned.]

A P P E N D I X

October 13, 2011

PREPARED STATEMENTS SUBMITTED FOR THE RECORD

OCTOBER 13, 2011

Statement of Hon. W. Todd Akin

Chairman, House Subcommittee on Seapower and Projection Forces

Hearing on

Update on KC–46A and Legacy Aerial Refueling Aircraft Programs

October 13, 2011

This afternoon the subcommittee meets to receive testimony from Department of Defense acquisition officials regarding the Air Force's new tanker program, the KC–46, and to receive an update on current tanker aircraft, the KC–135 and the KC–10. Normally, we would hold this type of hearing at the beginning of the budget cycle, but as everyone knows, the Air Force was still in source selection and we felt that it was prudent to delay until sufficient information was available to the public. We also intend to provide sufficient, but not overly burdensome, oversight of this program and expect that this will go into the record books as a model of success.

Today we have with us Mr. Shay Assad, Director of Defense Acquisition Policy and Strategic Sourcing; Mr. Dave Van Buren, the Air Force's Service Acquisition Executive; Major General Bruce Litchfield, Special Assistant to the Commander of Air Force Materiel Command; and Major General (Select) Chris Bogdan, Program Executive Officer for the KC–46 program.

I think it's safe to say that many folks have looked forward to this day, and more importantly, the fact that the Air Force has finally begun to replace its 50-year-old, Eisenhower-era tankers. And, that the old adage known as "Third Time's a Charm" has once again been reaffirmed by the Air Force's acquisition professionals.

As chairman of this subcommittee, I commend the acquisition corps of professionals who so diligently oversaw the process for this source selection and conducted what I felt to be a fair, open, transparent and fierce competition between two global competitors within the aircraft industry. I feel that the most affordable aircraft that met warfighter requirements for our Air Force was selected, and that the taxpayers' investment will provide many worthwhile and valuable returns.

Air-to-air refueling is a crucial capability within our military and is what enables our global reach, influence and projection of our joint and allied air forces. Whether it is providing fuel for fighter aircraft to remain orbiting overhead our soldiers and marines on the ground in Afghanistan, or fuel for allied aircraft operations over Libya, or fuel for the last leg of that C–17 mission bringing our wounded warriors home from battle, air-to-air refueling will

always, and should always, remain a mainstay of our core capabilities.

During this hearing, we hope to gain a better understanding of various elements of the KC–46 program and how it will be carried out, as well as understand all program risks that have been identified and the oversight mechanisms in place to keep the program on track. And, we will all appreciate the need for this new tanker as we hear testimony regarding our aging, but still capable, fleet of legacy tankers and the dedicated airmen that keep them flying. Finally, we'd like to gain an understanding on KC–46 program impacts as budget deliberations for the future continue to take center stage and remain uncertain.

Statement of Hon. Mike McIntyre

Ranking Member, House Subcommittee on Seapower and Projection Forces

Hearing on

Update on KC–46A and Legacy Aerial Refueling Aircraft Programs

October 13, 2011

I would like to thank all of the witnesses for appearing here today to talk about this very important topic. The Air Force has waited way too long for a replacement for the KC–135, an aircraft with an average age of nearly 50 years.

In our current environment of constrained budgets, it is absolutely critical that we get the KC–46 acquisition process on a stable track and on a schedule that is realistic and will not lead to costly delays. I understand that the Air Force recently completed an Integrated Baseline Review, and I am interested in hearing from the witnesses about any risks that were identified in that process.

Recent press reports have estimated that the KC–46 program will experience cost overruns of more than $300 million. I would like to better understand how much of these overruns the Government would be liable for and what measures are being taken to prevent any further cost overruns.

As we wait for the KC–46 to come online, I am concerned with the viability of our current legacy aerial refueling fleet. Their in-theater demand remains high and it appears that trend will continue in the near term. I look forward to hearing from the witnesses on the condition of our current legacy fleet and discussing their ability and capacity to meet increased theater demand.

We are well aware of the fiscal constraints that DOD is currently facing. To the extent possible, I would like to hear what potential impacts the Budget Control Act and possible sequestration will have on the overall aerial refueling mission.

I would like to thank the witnesses for their service to our country, and I thank the chairman for holding this important hearing today.

DEPARTMENT OF THE AIR FORCE

PRESENTATION TO THE
HOUSE ARMED SERVICES COMMITTEE
SUBCOMMITTEE ON SEAPOWER AND PROJECTION FORCES
U.S. HOUSE OF REPRESENTATIVES

SUBJECT: Update on KC-46A and Legacy Aerial Refueling Aircraft Programs

Witness Statement of:

Mr. David M. Van Buren
Air Force Service Acquisition Executive
Office of the Assistant Secretary
of the Air Force (Acquisition)

Mr. Shay Assad
Office of the Secretary of Defense,
Acquisition, Technology and Logistics
Director, Defense Pricing

Major General Bruce A. Litchfield
Special Assistant to the Commander
Air Force Materiel Command

Brigadier General Christopher Bogdan
KC-46 Program Executive Officer and
Program Director

October 13, 2011

NOT FOR PUBLICATION UNTIL RELEASED BY
HOUSE ARMED SERVICES COMMITTEE
SUBCOMMITTEE ON SEAPOWER AND PROJECTION FORCES
U.S. HOUSE OF REPRESENTATIVES

Chairman Akin, Ranking Member McIntyre, and distinguished members of the Subcommittee. We are pleased to update you on the status of our KC-135 and KC-10 fleets and how the KC-46 program is progressing almost 8 months after contract award.

As we have learned from history and current operations in Libya, Iraq, and Afghanistan, we must have a viable tanker fleet to maintain our global mobility advantage. Over the past 50 years, the United States Air Force has provided unparalleled air refueling capability to support our national defense. Air refueling forces provide a vital deployment and sustainment capability for Joint and Coalition forces, delivering essential fuel for worldwide missions ranging from major combat to humanitarian relief operations. Air refuelers enable American power projection and provide us with near-instantaneous global presence. Without these assets, there would be no air bridge to bring our forces and equipment to the fight; no ability to deter an enemy with the threat of a responsive bombing mission deep within their borders; and no extended reach capability to deliver vital humanitarian aid in those first critical hours after a natural disaster. We appreciate Congress's interest in this essential capability and we are grateful for your continued support of efforts to maintain our legacy tanker systems and recapitalize our tanker fleet to support national defense.

The Department of Defense remains mindful of our Nation's budgetary challenges and fiscal constraints; fiscal responsibility is a national security imperative. This environment requires that we balance our capabilities between current combat operations and the need to address emerging threats and future challenges. We seek cost-

effective systems that leverage existing capabilities and maximize interoperability and integration of legacy and future systems. Although recent interest has focused on the KC-46 program, we have not lost sight of the imperative to support and sustain our aging KC-10 and KC-135 tanker fleets.

The Air Force legacy tanker fleet has long been the backbone of the Department of Defense's global power projection and global reach capabilities. This venerable fleet consists of 414 KC-135 and 59 KC-10 aircraft with a projected service life through 2040. At that time, the average age of the KC-135 aircraft will be over 80 years, and the KC-10 aircraft will average over 54 years. As such, both airframes will be challenged by obsolete parts, diminishing manufacturing sources, and an increased, broader variety of maintenance issues attributed to old age. This will result in higher sustainment costs and lower aircraft availability.

The Air Force is also experiencing a high operational tempo for the legacy tanker fleet due to overseas contingency operations. For example, earlier this year while supporting Operations TOMODACHI, NEW DAWN, ODYSSEY DAWN, ENDURING FREEDOM, NOBLE EAGLE, and UNIFIED PROTECTOR and other commitments, 208 total force tankers out of a total fleet size of 473 were utilized on a single day. Because of this demand, the Air Force is executing multiple initiatives to keep these aircraft viable through a combination of robust modification and sustainment efforts.

For the KC-135, both aircraft availability and mission capable rates have remained steady over the last several years, with aircraft availability near 65% and mission capable rates of 80%. For the KC-10, the aircraft availability and mission

capable rates are 65% and 79%, respectively. Air Force personnel work hard to attain these rates by careful and vigilant management of sustainment programs.

To sustain and improve these operational performance indicators, the tanker fleet receives routine depot maintenance, and undergoes system modifications to address and mitigate parts obsolescence. Current modifications include modernizing air traffic management and friend or foe identification systems, as well as re-manufacturing obsolete parts, such as the refueling boom control unit for the KC-10 that will run out of spares in 2013. Looking farther out, the Air Force is conducting a six-year teardown study to be completed in fiscal year 2015 on three retired KC-135 aircraft to identify any structural integrity and corrosion issues. This study will help us identify potential emerging sustainment issues before they risk grounding some or all of the KC-135 fleet.

Given the planned service life of both the KC-135 and the KC-10 aircraft, the expected decrease in parts availability over the next 30 years, and the costs of sustaining these aging weapon systems, it is imperative for the Air Force to bring the KC-46 on-line and begin replacing the KC-135 fleet. In the meantime, the long-term sustainment plan for our legacy tanker fleet ensures we will meet our nation's aerial refueling needs while we execute the KC-46 program.

Recapitalizing the tanker fleet remains the Air Force's top acquisition priority. The KC-46's primary role will be to provide in-flight air refueling and will incorporate improved capabilities needed for tomorrow's missions. The KC-46 will enhance warfighter support by refueling both receptacle and probe-equipped receivers on every mission, and having a multi-point refueling system capable of refueling two probe-

equipped aircraft simultaneously. The KC-46 will also have the flexibility to contribute to a variety of airlift missions to include: airlift of passengers, palletized cargo, and aeromedical evacuation. Not only will it dramatically change our air refueling concept of operations, it will also allow us to improve the efficiency of our air mobility system. Other capabilities include: secure communication links to improve global connectivity, night vision acuity to improve warfighter effectiveness, and on-board defensive systems to allow the KC-46 to operate closer to the fight.

To acquire the capability the warfighter needs at a price the taxpayers can afford, the Air Force conducted a competitive source selection to initiate the first phase of a three-phase tanker recapitalization effort. Secretary Gates asked Secretary Carter and key members of his staff to oversee the process. The OSD staff led a comprehensive, multi-phase peer review and a red team to critically assess and advise the Air Force source selection official. Participants included a significant contingent of senior leaders representing a broad range of functional expertise from across the Department of Defense. The review validated the thoughtful Air Force execution of a sound acquisition strategy that was driven by clearly stated requirements to ensure the KC-46 will be ready to go to war on day one. The competition was fair, open, and transparent. The offerors submitted proposals that were evaluated against 372 mandatory requirements, mission effectiveness, life cycle costs as embodied in fuel efficiency and military construction costs, and final proposal pricing.

On February 24, 2011, the Air Force awarded an engineering, manufacturing and development contract for the KC-46 to The Boeing Company. This contract provides a

contract ceiling price of $4.83B for development. The contract structure helps protect the taxpayer by capping the government's cost liability, preventing runaway cost-growth, and providing a mechanism for managing and delivering the Air Force's desired capabilities. The contract features an incentive arrangement designed to motivate the contractor to adhere to cost control and schedule parameters. The development contract will design, develop, integrate, test, and deliver four aircraft by leveraging a commercial Boeing 767 platform using best practices from both the commercial and defense industries. The overall KC-46 program, which includes production, will deliver a capable aircraft at a competitive price, with the final amount depending on which contract options we exercise. The program strategy is to procure a total of 179 aircraft with the first 18 aircraft delivered by the end of FY17.

Maintaining production stability is a top priority. This stability is reinforced by keeping production quantities level, maintaining the baseline funding profile, and eliminating unwarranted engineering changes and requirements creep. As part of this contract, we have established a disciplined change management process to avoid cost overruns incurred by program changes. The contract provides for affordability tradeoffs and built in contract flexibility through variable quantity matrices for firm fixed price Low Rate Initial Production (LRIP) and not to exceed Full Rate Production (FRP) aircraft lot pricing (with and without engines). This provides the flexibility to accelerate aircraft production, should the budget allow, without having to renegotiate the aircraft prices. Similarly, the contract provides for affordability tradeoffs through built-in flexibility in the form of pricing matrices for Interim Contract Support based on the number of cumulative aircraft ordered and main operating bases supported. In addition, the

Government has procured extensive data rights in order to facilitate organic sustainment and the opportunity to compete maintenance and repair work in the future.

As Congress implements the Budget Control Act of 2011, it will of course consider impacts to KC-46 and other programs. Any reductions imposed by sequestration rules would adversely impact the Air Force's ability to perform its missions. At this point, however, it is too early to determine the specific impacts to aerial refueling programs because such cuts would require the Air Force to rebalance its entire portfolio of programs. Deep cuts to the KC-46 would gravely impact the program and any cuts will require re-negotiation of the contract, which would forgo the pricing achieved under competitive pressure. Likewise, fully funding the KC-46 program under sequestration would necessarily be at the expense of other programs.

As mentioned previously, KC-46 is the first phase of a three-phase tanker aircraft recapitalization effort. KC-46, KC-Y, and KC-Z will replace the legacy tanker fleet of KC-135s and KC-10s. This approach maintains the Air Force's economic advantage by reintroducing competition into the recapitalization process as new platform opportunities emerge, technologies advance, force structure requirements change, and threats evolve. In the initial phase, the KC-46 program will replace approximately one-third of the warfighting capability provided by the current aerial refueling fleet. We will retire legacy tankers on a one-for-one basis after delivery of the first lot of KC-46 aircraft so there will be no loss in capability. Overall, this strategy results in increased capability to the warfighter and savings to the taxpayer.

Since contract award eight months ago, the KC-46 Team has worked with Boeing, the Federal Aviation Administration, and many Department of Defense stakeholders to complete a comprehensive review of the KC-46 program. Through this rigorous process and in partnership with Boeing, we baselined the cost, schedule, technical performance, and risks of the program. As we work toward the low-rate initial production decision scheduled for late FY15, we are confident we can maintain the cost and schedule of this program while mitigating the identified risks.

The KC-46 beddown locations will be selected according to the long-accepted Air Force Strategic Basing Process. Under this process, Air Mobility Command will recommend basing options to the Secretary of the Air Force and Chief of Staff in December 2011. The Secretary and Chief have one year to make final decisions, which will impact military construction requirements as well as sustainment strategies.

In conclusion, we are committed to fielding the KC-46 on time and on budget so the warfighter is properly supported beyond 2040. In the meantime, the Air Force will continue to address new capabilities and upgrades needed for the legacy KC-135 and KC-10 tanker fleets to meet future airspace mandates and emerging technologies, resolve critical obsolescence and diminishing resource issues, and maintain operational relevancy.

We appreciate the Subcommittee's continued support for our Air Force tanker programs, recognizing they are vitally important to our nation's defense and security.

BIOGRAPHY

UNITED STATES AIR FORCE

DAVID M. VAN BUREN

Mr. David M. Van Buren is the Air Force Service Acquisition Executive, Washington, D.C. He is responsible for all Air Force research, development and acquisition activities. He provides direction, guidance and supervision of all matters pertaining to the formulation, review, approval and execution of acquisition plans, policies and programs. Mr. Van Buren directs the approximately $70 billion of annual investments that include major programs like the KC-46A, F-35, Advanced Extremely High Frequency Satellite, Evolved Expendable Launch Vehicle, Global Positioning System Satellite and weapons, as well as capability areas such as information technology, cyber, command and control and intelligence, surveillance and reconnaissance systems. He formulates and executes the roughly $300 billion five-year Air Force investment strategy to acquire systems and support services to provide combat capability to joint warfighting commanders. Since April 2009, he has been performing the duties of the Assistant Secretary of the Air Force, while serving as the Principal Deputy for Acquisition, Washington, D.C.

Mr. Van Buren has more than 30 years of acquisition experience in the Air Force, large defense corporations, and private equity owned small and medium aerospace and commercial high-technology firms. These technology areas include hyperspectral imaging; laser communications; alternative power sources; avionics; high-speed processing; compound semi-conductors; and satellite power systems. In 2005, he was also a member of the Defense Acquisition Performance Assessment Study Senior Review Team as its only small business representative.

Prior to entering public service, and for the past 15 years, Mr. Van Buren primarily worked as an executive for numerous private equity-owned high technology firms. He directed Raytheon's compound semi-conductor activity, and successfully transitioned TECSTAR, a small business, to being named one of the top 50 space manufacturers in the world by Space News. Mr. Van Buren was Vice President and Deputy Program Manager for the B-2 bomber at Northrop Corporation. He was involved in the transition to production, flight test, first flight and day-to-day program management activities. At Lockheed, he was a project manager on several classified airborne platforms, including the F-117A, and satellite platforms. Prior to his tenure at Lockheed, he served on active duty in the Air Force for nine years, including two tours in Southeast Asia, ending his career as a captain. His last Air Force assignment was as Program Manager in the AIM-9 Sidewinder Program Office.

EDUCATION
1971 Bachelor's degree in physical science, University of Illinois
1975 Master's degree in industrial management, Central Michigan University
1977 Education with Industry, Air Force Institute of Technology
1987 Executive Program, Stanford University

CAREER CHRONOLOGY
1. 1971 - 1981, Air Force officer
2. 1981 - 1983, Project Manager, Classified Programs, Lockheed Missiles and Space Company, Sunnyvale, Calif.
3. 1983 - 1987, Engineering Manager and Deputy Program Manager, B-2 Bomber, Northrop Corporation, Pico Rivera, Calif.
4. 1987 - 1992, Vice President and Deputy Program Manager, B-2 Bomber, Northrop Corporation, Pico Rivera, Calif.
5. 1992 - 2000, President and Chief Executive Officer, TECSTAR Corporation, City of Industry, Calif.
6. 2000 - 2001, President, Raytheon Microelectronics, Commercial Electronics Group, Andover, Mass.
7. 2001 - 2004, consultant and Chief Executive Officer for several private equity firms, Sudbury, Mass., and Blackhawk, Calif.
8. 2004 - 2007, Chairman, Chief Executive Officer and President, Novasol Inc., Honolulu, Hawaii
9. March 2008 - April 2009, Principal Deputy Assistant Secretary of the Air Force for Acquisition and Management, Washington, D.C.
10. April 2009 - present, Air Force Service Acquisition Executive duties, Washington, D.C.

(Current as of June 2011)

Biography

Shay D. Assad

Defense Pricing

Mr. Shay Assad assumed the role of Director of Defense Pricing in June of 2011. He is responsible for contract pricing policy matters within the Department of Defense (DoD). He serves as the principal advisor to the Under Secretary of Defense for Acquisition, Technology and Logistics (USD AT&L) and the Defense Acquisition Board on acquisition & procurement strategies for all major weapon systems programs, and major automated information systems programs. He is responsible for assisting the USD AT&L in the implementation of the Department's Better Buying Power initiatives. Mr. Assad is DoD's advisor for competition, source selection, multiyear contracting, warranties, leasing and all program related contracting matters. He is responsible for overseeing all Strategic Sourcing activities within the Department of Defense and also serves as co-leader and proponent of the Pricing and Contracting Community within the Department of Defense.

In April of 2006, Mr. Assad assumed the role of Director of Defense Procurement and Acquisition Policy. He also has previously served as the Assistant Deputy Commandant, Installations and Logistics (Contracts), Headquarters, Marine Corps, Washington, D.C.

Upon graduating with distinction from the U.S. Naval Academy in 1972, he served two tours of duty aboard U.S. Navy destroyers and won recognition as the Outstanding Junior Officer, Fifth Naval District. He then served as a Naval Procurement Officer at the Naval Sea Systems Command.

In 1978, Mr. Assad began working for the Raytheon Company. He was promoted to Vice President – Director of Contracts for Raytheon in 1994, and was subsequently promoted to Senior Vice President, Contracts in 1997. As such, he was responsible for the contract negotiation and administration activities ($20 Billion) in all of Raytheon's businesses – both government and commercial. In addition to his contracting duties, Mr. Assad was given numerous program and business management special assignments by Raytheon's Executive Office. These assignments spanned participation in all three of Raytheon's major operating businesses (Government, Aviation, and Engineering and Construction). In 1998, he was promoted to Executive Vice President and served as the Chief Operating Officer and subsequently, as the Chairman and Chief Executive Officer of Raytheon's Engineering and Construction (RE&C) business with eleven offices world-wide, revenue of $2.7B and 15,000 employees. He retired from Raytheon in July 2000.

He has received numerous Federal Service awards. Among them are: 1) the Secretary of Defense medal for exceptional civilian service; 2) the Secretary of Defense medal for meritorious service; 3) the Department of Defense Inspector General Joseph H. Sherick Award (the highest honor given to non-IG employees); 4) the 24th Annual Gilbert A. Cuneo Lecturer; 5) the inaugural recipient of the 2008 Osborne A. "Oz" Day Award as the Federal executive who has done the most to increase the awareness of Ability One employment opportunities for those who are blind or severely disabled, and 6) the E. Richard "Dick" Alley Career Achievement Award which is given to one federal employee whose long-term dedication and support of the AbilityOne Program is exemplary, and worthy of the Committee's highest recognition; 7) the David Acker Award for Acquisition Excellence; and 8) a Meritorious Presidential Rank Award in 2009.

On January 19, 2009, He assumed the position of Acting Deputy Under Secretary of Defense for Acquisition and Technology; serving in an advisory function to the Secretary, Deputy Secretary, and Under Secretary of Defense (Acquisition, Technology and Logistics) on matters relating to the acquisition, integration and protection of technology. On December 15, 2009, he was designated to perform the duties of the Assistant Secretary of Defense for Acquisition (ASD(A)).

BIOGRAPHY

UNITED STATES AIR FORCE

MAJOR GENERAL BRUCE A. LITCHFIELD

Maj. Gen. Bruce A. Litchfield is the Special Assistant to the Commander, Air Force Materiel Command, located at Tinker Air Force Base, Okla. As the Special Assistant to the Commander, he is responsible for overseeing transformation initiatives throughout the Air Force Materiel Command. The command conducts research, development, test and evaluation, and provides acquisition management services and logistics support necessary to keep Air Force weapon systems ready for war.

General Litchfield entered the Air Force in 1981 as a distinguished graduate from the ROTC program at Norwich University, Vermont. His career spans diverse logistics and acquisition assignments supporting weapon systems at wing, major command, Air Staff and the Joint Staff levels. He has commanded a supply squadron, logistics group and combat support systems wing and was the Director of Logistics, Headquarters Pacific Air Forces, Hickam AFB, Hawaii. Prior to his current assignment he was the Commander, 76th Maintenance Wing, Oklahoma City Air Logistics Center, Tinker Air Force Base, Okla.

EDUCATION

1981 Bachelor of Science degree in electrical engineering, Norwich University, Northfield, Vt.
1983 Master of Science degree in administration, Georgia College, Milledgeville
1985 Squadron Officer School, Maxwell AFB, Ala.
1992 Program Management Course, Defense Systems Management College, Fort Belvoir, Va.
1995 Distinguished graduate, Master of Arts degree in national strategy, Naval Command and Staff College, Naval War College, Newport, R.I.
1998 Air War College, Maxwell AFB. Ala.
2004 National Security Management Course, Syracuse University, N.Y.
2009 Program for Senior Managers in Government, John F. Kennedy School of Government, Harvard University, Cambridge, Mass.

ASSIGNMENTS

1. June 1981 - June 1985, Electronic Warfare Integrated Systems Manager, Warner Robins Air Logistics Center, Robins AFB, Ga.
2. June 1985 - June 1988, Chief, B-1B Systems Engineering Section, Headquarters Strategic Air Command, Offutt AFB, Neb

3. June 1988 - March 1990, Chief, Electronic Warfare Analysis Branch, Office of the Assistant Secretary of the Air Force for Acquisition, the Pentagon, Washington, D.C.
4. March 1990 - January 1993, F-22 program element monitor, Office of the Assistant Secretary of the Air Force for Acquisition, the Pentagon, Washington, D.C.
5. January 1993 - June 1994, member, Chief of Staff of the Air Force Operations Group, the Pentagon, Washington, D.C.
6. June 1994 - June 1995, student, College of Naval Command and Staff, Naval War College, Newport, R.I.
7. June 1995 - June 1997, Commander, 49th Supply Squadron, Holloman AFB, N.M.
8. July 1997 - June 1998, student, Air War College, Maxwell AFB, Ala.
9. June 1998 - June 2000, joint requirements planner, Directorate for Force Structure, Resources and Assessment (J8), Joint Staff, the Pentagon, Washington, D.C.
10. June 2000 - April 2002, Commander, 354th Logistics Group, Eielson AFB, Alaska
11. April 2002 - April 2003, Deputy Commander, Transformation, Headquarters Air Force Materiel Command, Wright-Patterson AFB, Ohio
12. April 2003 - June 2003, Director, Electronic Warfare Management Directorate, Warner Robins ALC, Robins AFB, Ga.
13. June 2003 - October 2004, Director, Combat Electronic Systems Directorate, Warner Robins ALC, Robins AFB, Ga.
14. October 2004 - January 2006, Commander, Agile Combat Support Systems Wing, Wright-Patterson AFB, Ohio
15. January 2006 - November 2006, Chief of Staff, Headquarters Air Force Materiel Command, Wright-Patterson AFB, Ohio
16. November 2006 - July 2007, Vice Commander, Aeronautical Systems Center, Wright-Patterson AFB, Ohio
17. July 2007 - December 2008, Director of Logistics, Headquarters Pacific Air Forces, Hickam AFB, Hawaii
18. January 2009 - April 2011, Commander, 76th Maintenance Wing, Oklahoma City Air Logistics Center, Tinker AFB, Okla.
19. April 2011 - Present, Special Assistant to the Commander, Air Force Materiel Command, Tinker AFB, Okla.

SUMMARY OF JOINT ASSIGNMENTS
1. June 1998 - June 2000, joint requirements planner, Directorate for Force Structure, Resources and Assessment (J8), Joint Staff, the Pentagon, Washington, D.C, as a lieutenant colonel and colonel
2. July 2007 - December 2008, Director of Logistics, Joint Task Force-519, Makalapa, Hawaii, as a colonel and brigadier general

MAJOR AWARDS AND DECORATIONS
Legion of Merit with two oak leaf clusters
Defense Meritorious Service Medal
Meritorious Service Medal with four oak leaf clusters
Air Force Commendation Medal
Air Force Achievement Medal

EFFECTIVE DATES OF PROMOTION
Second Lieutenant May 23, 1981
First Lieutenant June 25, 1983
Captain June 25, 1985
Major Nov. 1, 1993
Lieutenant Colonel Jan. 1, 1997
Colonel April 1, 2000
Brigadier General Nov. 2, 2007
Major General Nov. 12, 2010

(Current as of May 2011)

BIOGRAPHY

UNITED STATES AIR FORCE

BRIGADIER GENERAL CHRISTOPHER C. BOGDAN

Selected for promotion to major general.

Brig. Gen. Christopher C. Bogdan is the KC-46 Program Executive Officer and Program Director, KC-46 Tanker Modernization Directorate, Aeronautical Systems Center, Wright-Patterson Air Force Base, Ohio. He is responsible for developing, testing, fielding and supporting the replacement aircraft for the KC-135.

General Bogdan was commissioned in 1983 from the U.S. Air Force Academy. He has served as an operational pilot, test pilot, staff officer, executive officer, acquisition program manager and program director. He is a command pilot and experimental test pilot with more than 3,200 flying hours in more than 35 aircraft types, including the KC-135, FB-111A, B-2 and F-16. He has commanded at the squadron and group levels, and also served as the executive officer to the Commander, Electronic Systems Center, and to the Commander, Air Force Materiel Command.

Prior to his current assignment, General Bogdan was the Senior Military Assistant to the Under Secretary of Defense for Acquisition, Technology and Logistics, Office of the Secretary of Defense, Washington, D.C.

EDUCATION

1983 Distinguished graduate, Bachelor of Science degree in aeronautical engineering, U.S. Air Force Academy, Colorado Springs, Colo.
1989 Distinguished graduate, Squadron Officer School, Maxwell AFB, Ala.
1990 Distinguished graduate, USAF Test Pilot School, Edwards AFB, Calif.
1994 Master of Science degree in engineering management, with distinction, California State University, Northridge
1995 Distinguished graduate, Air Command and Staff College, Maxwell AFB, Ala.
1998 Air War College, by correspondence
2000 Distinguished graduate, Master of Science degree in national resource strategy, Industrial College of the Armed Forces, Fort Lesley J. McNair, Washington, D.C.
2005 Advanced Program Managers Course, Defense Systems Management College, Fort Belvoir, Va.
2006 USAF Senior Leadership Course, Center for Creative Leadership, Greensboro, N.C.
2007 National Security Management Course, Maxwell School of Citizenship, Syracuse University, N.Y.

ASSIGNMENTS

1. July 1983 - June 1984, student, undergraduate pilot training, Reese AFB, Texas
2. June 1984 - November 1984, pilot, KC-135 crew training, Castle AFB, Calif.
3. November 1984 - March 1987, pilot, KC-135A and T-37A, 509th Air Refueling Squadron, Pease AFB, N.H.
4. March 1987 - April 1988, pilot, FB-111A Crew Training, Plattsburgh AFB, N.Y.
5. April 1988 - June 1990, FB-111A instructor pilot, 393rd Bomb Squadron, Pease AFB, N.H.
6. June1990 - June 1991, student, Class 90B, USAF Test Pilot School, Edwards AFB, Calif.
7. June 1991 - December 1991, experimental test pilot, 6512th Test Operations Squadron, Edwards AFB, Calif.
8. December 1991 - June 1995, B-2 experimental test pilot, B-2 Chief of Training, B-2 Test Program Manager and Assistant Deputy for Operations, 420th Flight Test Squadron, Edwards AFB, Calif.
9. June 1995 - June 1996, student, Air Command and Staff College, Maxwell AFB, Ala.
10. June 1996 - May1997, Program Manager, Theater Missile Defense Systems, Special Projects Program Office, Electronic Systems Center, Hanscom AFB, Mass.
11. May 1997 - June 1999, executive officer to the Commander, Electronic Systems Center, Hanscom AFB, Mass.
12. June 1999 - June 2000, student, Industrial College of the Armed Forces, Fort Lesley J. McNair, Washington, D.C.
13. June 2000 - May 2001, Deputy Commander, 412th Operations Group, Edwards AFB, Calif.
14. May 2001 - July 2002, Commander, 645th Materiel Squadron, Wright-Patterson AFB, Ohio
15. July 2002 - September 2003, executive officer to the Commander, Air Force Materiel Command, Wright-Patterson AFB, Ohio
16. September 2003 - June 2005, Commander, Special Operations Forces Systems Group, Wright-Patterson AFB, Ohio
17. June 2005 - May 2006, Deputy Director, Directorate of Global Power, Office of the Assistant Secretary of the Air Force for Acquisition, Headquarters U.S. Air Force, Washington, D.C.
18. May 2006 - May 2008, Senior Military Assistant to the Deputy Under Secretary of Defense for Acquisition and Technology, Office of the Secretary of Defense, Washington, D.C.
19. May 2008 - May 2009, Senior Military Assistant to the Under Secretary of Defense for Acquisition, Technology and Logistics, Office of the Secretary of Defense, Washington, D.C.
20. June 2009 - present, KC-46 Program Executive Officer and Program
Director, KC-46 Tanker Modernization Directorate, Aeronautical Systems Center, Wright-Patterson AFB, Ohio

SUMMARY OF JOINT ASSIGNMENTS
May 2006 - May 2009, Senior Military Assistant to Deputy Under Secretary of Defense for Acquisition and Technology, and Senior Military Assistant to the Under Secretary of Defense for Acquisition, Technology and Logistics, Office of the Secretary of Defense, Washington, D.C.

FLIGHT INFORMATION
Rating: Command pilot, parachutist
Flight hours: More than 3,200
Aircraft flown: KC-135A/E, FB-111A, F-16A/B, B-2A, T-37A, T-38, B707, RC-135, T-39A and 25 other aircraft types

MAJOR AWARDS AND DECORATIONS
Defense Superior Service Medal
Meritorious Service Medal with silver and bronze oak leaf clusters
Air Force Commendation Medal
Air Force Aerial Achievement Medal
Air Force Achievement Medal

OTHER ACHIEVEMENTS
Outstanding Cadet in aeronautical engineering, U.S. Air Force Academy
British Marshall Scholarship National Finalist
Rhodes Scholar Candidate, U.S. Air Force Academy

Distinguished graduate, KC-135 Training
Outstanding graduate, FB-111A Flight Instructor Course
Company Grade Officer of the Year, Air Force Flight Test Center

PROFESSIONAL CERTIFICATIONS
Program Management, Level III, Acquisition Professional Development Program
Test and Evaluation, Level III, APDP

EFFECTIVE DATES OF PROMOTION
Second Lieutenant June 1, 1983
First Lieutenant June 1, 1985
Captain June 1, 1987
Major March 1, 1995
Lieutenant Colonel Sept. 1, 1998
Colonel Aug. 1, 2002
Brigadier General Dec. 9, 2008

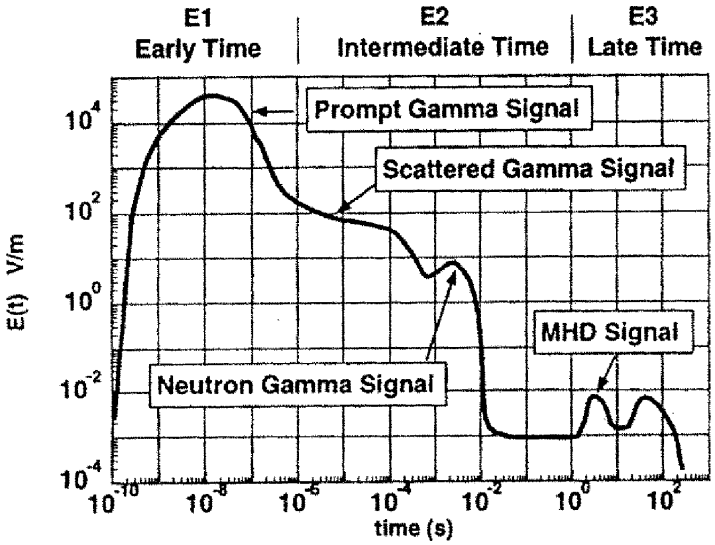
(Current as of May 2011)

WITNESS RESPONSES TO QUESTIONS ASKED DURING THE HEARING

OCTOBER 13, 2011

RESPONSES TO QUESTIONS SUBMITTED BY MR. BARTLETT

General BOGDAN. MIL–STD–2169 addresses all aspects of the current EMP threat and provides detailed descriptions of the components of high-altitude EMP (HEMP) threat waveforms, which include E1 (prompt gamma HEMP), E2 (scattered and neutron inelastic gamma HEMP), and E3 (magnetohydrodynamic (MHD) HEMP). An unclassified composite waveform of E1, E2, and E3 HEMP environment is shown below.



Only the E1 waveform is applicable to KC–46 aircraft as it couples well to antennas, equipment (through apertures), conductive lines, and contains strong in-band signals to interfere with communication receivers. Due to low frequency content, the E2 and E3 components do not affect aircraft. The E2 component couples to overhead and buried long conductive lines, vertical antenna towers, and aircraft with trailing wire antennas. The E3 component couples to power and long communication lines including undersea cables.

MIL–STD–2169 is based on all currently known EMP threats and is maintained and updated by the Defense Threat Reduction Agency (DTRA) (8725 John J. Kingman Road, Stop 6201, Ft. Belvoir, VA 22060). [See page 10.]

General BOGDAN. The KC–46 System Specification includes a contractual requirement to withstand an electromagnetic pulse (EMP) at least two times (6 dB) the EMP threat environment defined in the classified MIL–STD–2169. KC–46 aircraft will be designed and tested to meet this requirement. [See page 11.]

RESPONSE TO QUESTION SUBMITTED BY MR. COURTNEY

General LITCHFIELD. Total # of Air Refueling (AR) Sorties: 6043
Total # of USAF Air Refueling Sorties: 4256
U.S. Percentage of Total Air Refueling Sorties: 70.42%
[See page 12.]

RESPONSE TO QUESTION SUBMITTED BY MR. CRITZ

General BOGDAN. The contractual requirement is for Boeing to deliver 18 aircraft ready to go to war on day one with all the support equipment, all the tech orders and all of the training, to the Air Force by August of 2017. As part of the Integrated Baseline Review (IBR) process, Boeing established an internal baseline schedule to deliver those 18 aircraft in March of 2017, approximately five months earlier than contractually required.

During the IBR process, the KC–46 Directorate assessed Boeing's overall schedule, the likelihood of Boeing meeting their internal March 2017 baseline date, and the likelihood of Boeing meeting the contractually required August 2017 date. The KC–46 Directorate came to the conclusion that it is likely that Boeing will meet the contractually required August 2017 date, but that there are four risks to the supporting schedule to closely manage during contract execution.

Risk #1: In-line provisioning. Instead of building a basic commercial aircraft on their production line at Everett and then flying it down to Wichita to take it apart and install the military modifications on it, what they're doing is called in-line provisioning. In-line provisioning means that Boeing is going to build the wiring and the bundling and the fuel lines in the aircraft at Everett as if the military modifications were going to be fit on the line.

For example, when Boeing builds the tail of a 767 for a commercial customer, the tail of that aircraft does not have a hole in it to fit a boom. But for the KC–46 aircraft, when the tail section of that 767–2C gets to Everett, it will already have the hole in it for Boeing to put the boom in place. Boeing is passing down to their subtier suppliers an additional requirement to build the aircraft as if it were in the military aircraft configuration even though it's going to be put together on a commercial line. While Boeing does this quite often in different variants of their commercial aircraft, doing so on an aircraft with military requirements and specifications increases the level of risk for accomplishing that work on time.

Risk #2: FAA Certification. Boeing is going to deliver an airplane to the Government that is FAA certified. There are two elements to FAA certification. The first is an Amended Type Certification (ATC) associated with the commercial 767–2C. The is a Supplemental Type Certification (STC) associated with the military modifications that Boeing is going to put on the aircraft. It is typical to accomplish the ATC and STC in a serial manner—ATC first, install the military modifications, and then the STC. In this case, as a result of that in-line provisioning, Boeing is actually going to accomplish a portion of the ATC and STC concurrently. If a problem arises during the FAA ATC process, there is not a lot of time for Boeing to recover before they get to the STC process, which must be done before the Government can deem the aircraft airworthy to fly.

The KC–46 Directorate has been working with the FAA, and the FAA has basically approved Boeing's process for accomplishing the ATC and STC effort. However, the Government and Boeing team must collectively work to ensure there are no major issues with obtaining the initial ATC because that will—given the concurrency— propagate into the STC process.

Risk #3: Flight Test. The test program, particularly for the Aerial Refueling certifications, will require efficient use and synchronization of FAA, developmental, and operational test resources to avoid driving additional test events, and to finish the test program objectives on schedule. While the KC–46 Directorate determined that Boeing has adequately justified their capability to achieve the proposed flight hours/month and effectiveness rate for FAA certification of the 767–2C with 65 hours/month and 85% effectiveness (i.e., a 15% re-fly rate), the KC–46 Directorate has some concern with Boeing's ability to achieve their proposed KC–46 sortie rate of 50 hours/month and 85% effectiveness given the amount of coordination and synchronization with outside resources. The KC–46 Directorate is working with Boeing to identify resource requirements and constraints to mitigate this risk.

Risk #4: Software. Boeing plans to reuse 70%–80% of existing software on the KC–46 program. Although a higher reuse rate might be expected on a commercial derivative aircraft program, historical experience on military programs would typically suggest a software reuse rate of 20%–30%. Because of this, the KC–46 Directorate is focusing on software early in the program to ensure Boeing puts the proper emphasis on this area, especially given the modifications to the commercial software required to accommodate classified/unclassified separation, information assurance and other military capabilities. The program will use simulation and hardware and software integration laboratories to provide early indication of software effectiveness. In addition, the Government is driving the requirement to capture leading software metrics to pinpoint areas of concern such that appropriate expertise and

resources can engage early enough to prevent significant impacts to the program schedule. [See page 10.]

QUESTIONS SUBMITTED BY MEMBERS POST HEARING

OCTOBER 13, 2011

QUESTIONS SUBMITTED BY MR. PALAZZO

Mr. PALAZZO. Given the experience with late deliveries of Boeing's Italian tanker program largely due to problems with the aerial refueling systems and the fact that the Government has listed the KC–46 wing pods and the fly-by-wire boom systems as major risk items, what process did the Government use to evaluate the readiness level of those key aerial refueling systems to ensure they can be developed and qualified in time to meet the proposed delivery schedule?

Mr. VAN BUREN, General LITCHFIELD, and General BOGDAN. The RFP required a technology readiness level (TRL) assessment as well as an assessment of the risk associated with the approach. The TRL was assessed in accordance with the governing TRL standard. The risk was assessed based on technical judgment and past experience of many highly experienced evaluators. Boeing's design and approach was found to be TRL 6 or higher with an acceptable level of risk. With respect to the Italian tanker, Boeing's past experience produced significant lessons learned for the KC–46 program. For example, the issue with the wing pods was discovered on the Italian program which allowed Boeing to start mitigating the risk before contract award. The Italian program also provided relevant experience with boom control laws. Additionally, the KC–46 boom is the same shape as the KC–10 boom which allows the use of extensive historical data (analysis, wind tunnel, and flight test) to mitigate the development risk.

Mr. PALAZZO. The documents we have reviewed indicate Boeing had acceptable plans to meet 577 requirements. The KC–X RFP mandates 372 mandatory requirements and the post-contract award documents indicate Boeing bid less than 18 nonmandatory requirements (the number EADS [European Aeronautic Defence and Space Company N.V.] bid) for a maximum of 390 requirements. What are the other requirements?

Mr. VAN BUREN, General LITCHFIELD, and General BOGDAN. There are no additional requirements. The difference in number of requirements is solely due to Boeing separating single Government requirements into different system specification paragraphs. Breaking down requirements is a standard systems engineering practice. For example, if the Government required a capability on the ground and in-flight, Boeing may have two separate paragraphs—one for the capability in-flight and one for the capability on the ground.

Mr. PALAZZO. The schedule appears highly concurrent and compressed. From the materials presented we understand first flight is scheduled for 3Q14, followed by the initiation of the development test program in 2Q15, and a Milestone C decision planned for 4Q15. Thus, simultaneously with the occurrence of the IOT&E phase (3Q16–1Q17), 14 aircraft production representative aircraft must be delivered in 33 months (August 2017). What independent tool, process, or agency did the Government use to determine this was only a moderate risk schedule?

Mr. VAN BUREN, General LITCHFIELD, and General BOGDAN. During both the KC–X source selection and the post-contract award Integrated Baseline Review (IBR) process, the Department used independent cross-functional teams of subject matter experts to assess Boeing's schedule and test approach.

The KC–X source selection evaluation team conducted a thorough evaluation of each offeror's proposal (to include each offeror's program schedules and test approaches), per Section M of the Request for Proposal, to ensure there was "an expectation of a low to moderate risk of unsuccessful contract performance." The KC–X source selection evaluation team—specifically evaluated by subject matter experts from the KC–X program office, Air Force Flight Test Center (AFFTC), Air Force Operational Test and Evaluation Center (AFOTEC), AMC/TE, US Navy NAVAIR, Joint Interoperability Test Command (JITC), AF SEEK EAGLE Office (AFSEO) and reviewed by Air Force and OSD experts—concluded that Boeing's test schedule and test approach was acceptable, and therefore, represented a "low to moderate risk of unsuccessful contract performance." These organizations and subject matter experts provided a cross-service, independent assessment of Boeing's schedule and test approach informed by experience from previous, relevant EMD programs.

During the post-contract award IBR process, Boeing reiterated their internal baseline schedule to deliver the 18 aircraft in March of 2017, approximately five months

earlier than contractually required. The KC–46 Directorate (supported by the FAA and Defense Contract Management Agency) again assessed Boeing's overall schedule and test approach, the likelihood of Boeing meeting their internal March 2017 baseline date, and the likelihood of Boeing meeting the contractually required August 2017 date. The KC–46 Directorate concluded that it is likely (moderate risk) that Boeing will meet the contractually required August 2017 date, but that there are four risks to the supporting schedule to closely manage during contract execution.

Risk #1: In-line provisioning. Instead of building a basic commercial aircraft on their production line at Everett and then flying it down to Wichita to take it apart and install the military modifications on it, what they're doing is called in-line provisioning. In-line provisioning means that as Boeing builds the aircraft in Everett, they are going to do so with the wiring and the bundling and the fuel lines as if the military modifications were going to be fit on the line right there.

For example, when Boeing builds the tail of a 767 for a commercial customer, the tail of that aircraft does not have a hole in it to fit a boom. But for the KC–46 aircraft, when the tail section of that 767–2C gets to Everett, it will already have the hole in it for Boeing to put the boom in place. So Boeing is passing down to their sub-tier suppliers an additional requirement to build the aircraft as if it were a military aircraft even though it's going to be put together on a commercial line. While Boeing does this quite often in different variants of their commercial aircraft, to do so on a military aircraft with military requirements and specifications increases the level of risk for accomplishing that work on time.

Risk #2: FAA Certification. Boeing is going to deliver an airplane to the Government that is FAA certified. There are two elements to FAA certification. The first is an Amended Type Certification (ATC) associated with the commercial 767–2C. The second part of the FAA certification is called a Supplemental Type Certification (STC) associated with the military modifications that Boeing is going to put on the aircraft. It is typical in the commercial world to accomplish the ATC and STC in a serial manner. You accomplish the ATC first, install the military modifications, and then accomplish the STC. In this case, as a result of that in-line provisioning, Boeing is actually going to accomplish a portion of the ATC and STC concurrently. If a problem arises during the FAA certification on the ATC side, there is not a lot of time for Boeing to recover before they get to the STC side, which must be done before the Government can deem the aircraft airworthy to fly.

The KC–46 Directorate has been working with the FAA, and the FAA has basically approved Boeing's process for accomplishing the ATC and STC effort. However, the Government and Boeing team must collectively work to ensure there are no major missteps in the initial ATC part, because that will—given the concurrency—propagate into the STC part of the certification.

Risk #3: Flight Test. The test program, particularly for the aerial refueling certifications, will require efficient use and synchronization of FAA, developmental, and operational test resources to avoid driving additional test events, and to finish the test program objectives on schedule. While the KC–46 Directorate determined that Boeing has adequately justified their capability to achieve the proposed flight hours/month and effectiveness rate for FAA certification of the 767–2C with 65 hours/month and 85% effectiveness (i.e., a 15% re-fly rate), the KC–46 Directorate has some concern with Boeing's ability to achieve their proposed KC–46 sortie rate of 50 hours/month and 85% effectiveness given the amount of coordination and synchronization with outside resources. The KC–46 Directorate is working with Boeing to identify resource requirements and constraints to mitigate this risk.

Risk #4: Software. Boeing plans to reuse 70%–80% of existing software on the KC–46 program. Although a higher reuse rate might be expected on a commercial derivative aircraft program, historical experience on military programs would typically suggest a software reuse rate of 20%–30%. Because of this, the KC–46 Directorate is focusing on software early in the program to ensure Boeing puts the proper emphasis on this area, especially given the modifications to the commercial software required to accommodate classified/unclassified separation, information assurance and other military capabilities. The program will use simulation and hardware and software integration laboratories, solely dedicated to the KC–46 program, to provide early indication of software effectiveness. In addition, the Government is driving the requirement to capture leading software metrics to pinpoint areas of concern such that appropriate expertise and resources can engage early enough to prevent significant impacts to the program schedule.

Mr. PALAZZO. We understand that all 4 EMD aircraft are planned to be instrumented for the test phase and the IOT&E period is not scheduled to end until 1Q17. Presumably those 4 EMD aircraft will be added to the 14 LRIP aircraft to fulfill the requirement to deliver 17 [18] aircraft within 78 months after contract award.

A. What mechanism did the Government use to ensure these aircraft can be de-instrumented and modified to production representative status and delivered by August 2017?

B. How does this schedule risk assessment take advantage of lessons learned from previous concurrent EMD schedule programs?

C. How does the Government intend to protect the warfighter's interest if the contractual schedule mandate (17 [18] aircraft within 78 months after contract award) is not met (i.e., will the Government seek reimbursement from the contractor to offset sustainment costs required to maintain the legacy tanker fleet)?

Mr. VAN BUREN, General LITCHFIELD, and General BOGDAN. A. Boeing's schedule shows a 90-day period per EMD aircraft that occurs prior to IOT&E for de-instrumentation and to update to a production representative baseline configuration as required for IOT&E per Title 10. After completion of IOT&E, the contract calls for these aircraft to reset all inspection clock times to zero and have deficiencies identified through IOT&E corrected to meet the final product baseline prior to final delivery to the Air Force.

B. During both the KC–X source selection and the post-contract award Integrated Baseline Review (IBR) process, the Department used independent cross-functional teams of subject matter experts (SME) to assess Boeing's schedule and test approach. These SMEs were able to provide lessons learned from various concurrent EMD schedule programs and identify risk areas with Boeing's approach.

The KC–X source selection evaluation team conducted a thorough evaluation of each offeror's proposal (to include each offeror's program schedules and test approaches), per Section M of the Request for Proposal, to ensure there was "an expectation of a low to moderate risk of unsuccessful contract performance." The KC–X source selection evaluation team—specifically evaluated by subject matter experts from the KC–X program office, Air Force Flight Test Center (AFFTC), Air Force Operational Test and Evaluation Center (AFOTEC), AMC/TE, US Navy NAVAIR, Joint Interoperability Test Command (JITC), AF SEEK EAGLE Office (AFSEO) and reviewed by Air Force and OSD experts—concluded that Boeing's test schedule and test approach was acceptable, and therefore, represented a "low to moderate risk of unsuccessful contract performance." During source selection, these organizations and subject matter experts provided a cross-service, independent assessment of Boeing's schedule and test approach informed by experience from previous, relevant EMD programs.

During the post-contract award IBR process, Boeing reiterated their internal baseline schedule to deliver the 18 aircraft in March of 2017, approximately five months earlier than contractually required. The KC–46 Directorate (supported by the FAA and Defense Contract Management Agency) again assessed Boeing's overall schedule and test approach, the likelihood of Boeing meeting their internal March 2017 baseline date, and the likelihood of Boeing meeting the contractually required August 2017 date. The KC–46 Directorate concluded that it is likely (moderate risk) that Boeing will meet the contractually required August 2017 date, but that there are four risks to the supporting schedule to closely manage during contract execution.

Risk #1: In-line provisioning. Instead of building a basic commercial aircraft on their production line at Everett and then flying it down to Wichita to take it apart and install the military modifications on it, what they're doing is called in-line provisioning. In-line provisioning means that as Boeing builds the aircraft in Everett, they are going to do so with the wiring and the bundling and the fuel lines as if the military modifications were going to be fit on the line right there.

For example, when Boeing builds the tail of a 767 for a commercial customer, the tail of that aircraft does not have a hole in it to fit a boom. But for the KC–46 aircraft, when the tail section of that 767–2C gets to Everett, it will already have the hole in it for Boeing to put the boom in place. So Boeing is passing down to their sub-tier suppliers an additional requirement to build the aircraft as if it were a military aircraft even though it's going to be put together on a commercial line. While Boeing does this quite often in different variants of their commercial aircraft, to do so on a military aircraft with military requirements and specifications increases the level of risk for accomplishing that work on time.

Risk #2: FAA Certification. Boeing is going to deliver an airplane to the Government that is FAA certified. There are two elements to FAA certification. The first is an Amended Type Certification (ATC) associated with the commercial 767–2C. The second part of the FAA certification is called a Supplemental Type Certification (STC) associated with the military modifications that Boeing is going to put on the aircraft. It is typical in the commercial world to accomplish the ATC and STC in a serial manner. You accomplish the ATC first, install the military modifications, and then accomplish the STC. In this case, as a result of that in-line provisioning,

Boeing is actually going to accomplish a portion of the ATC and STC concurrently. If a problem arises during the FAA certification on the ATC side, there is not a lot of time for Boeing to recover before they get to the STC side, which must be done before the Government can deem the aircraft airworthy to fly.

The KC–46 Directorate has been working with the FAA, and the FAA has basically approved Boeing's process for accomplishing the ATC and STC effort. However, the Government and Boeing team must collectively work to ensure there are no major missteps in the initial ATC part, because that will—given the concurrency—propagate into the STC part of the certification.

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C. The Air Force will hold Boeing responsible for all contractual obligations. If Boeing does not meet its contractual obligations—for example, meeting the August 2017 RAA date with 18 aircraft—due to a contract-caused delay, then the Government would negotiate an adjusted schedule with Boeing and seek appropriate consideration from Boeing for that change. FAR 49.402–4 provides the contracting officer with the ability to "permit the contractor, the surety, or the guarantor, to continue performance of the contract under a revised delivery schedule." In conjunction with reaching an agreement on a revised delivery schedule, FAR 49.402–7 requires the contracting officer to promptly "assess and demand any liquidated damages to which the Government is entitled under the contract."

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