

Major General John Thompson
"KC-46A Program Status"
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Maj Gen Thompson: Welcome, everybody to a KC-46 update.

Just a couple of things to get out of the way first. First of all, I'm the PEO for tankers, but I would be remiss if I didn't introduce a couple of other key personnel in the room. First is Colonel Chris Coombs here on the front row. Chris, stand up and wave. Colonel Coombs is the Assistant Program Director for the KC-46 program. He is responsible for essentially the 160-165 people at Wright-Patterson Air Force Base who on behalf of the United States government are busily working with our contract partner, Boeing, to deliver this capability to the warfighter.

Secondly I'd like to introduce Mr. Jim Eisenhart from Boeing. The last couple of years my counterpart, the program manager for Boeing has been here. But as you'll see in my presentation here, my counterpart's name is Mr. Tim Peters and he is back in Seattle this week working on some issues that we'll talk about in my presentation.

First of all, many of you who saw the Secretary's kickoff speech yesterday for AFA heard her mention in the briefing that there were an additional 50-plus new exhibitors this year down in the technology expo. Are any of those new exhibitors here in the room? Anybody? Raise your hand, don't be shy. Okay, there are some new exhibitors in here. Thank you. Thank you. And I'll tell you why. Not just on behalf of the United States Air Force but also on behalf of the Air Force Association, as a speaker, thank you for being a new exhibitors because that means that this year for the KC-46 update I am no longer in something that was called the last couple of years the speaker's corner down on the tech expo floor. The problem with the speaker's corner down on the tech expo floor was that you had one computer screen about a quarter the size of one of these computer screens. And during your presentation people were walking in and walking out and they were looking in their goody bag, and in their goody bag they had something oh, I got a laser pointer from Northrop Grumman. And they start -- I got spotted during my presentation. Then at one point, this was two years ago, they

had served what was left of some Air Force anniversary cake, and literally in the middle of my presentation a gentleman came down front, right to the corner of the stage, and just stood there eating cake right in front of me. [Laughter]. So thank you to new exhibitors for taking up all that square footage up there so I don't have to deal with that anymore, and many of the other speakers don't as well.

The Secretary of the Air Force yesterday talked about bold leadership. And bold leadership is no more demonstrated than the first generation tanker that our United States used, and I'm going to just throw this out there. Does anybody know the name of our first tanker? No. Okay. That's a great answer.

The Question Mark in January of 1929, the mission that proved the value of aerial fueling. Question Mark stayed aloft for 150-plus hours that first week of January, 1929. There were a couple of pilots on board in terms of bold leadership that we all know -- Ira Eaker, Carl Spaatz. Those names should ring a bell. But the Question Mark was the receiver aircraft. The actual refueler was a Douglas C-1, I believe, and that's a picture of it right there. That's a little garden hose coming out the bottom of it that the people on the Question Mark would reach out an impromptu hole in the hatch, pull the garden hose in and over that course of 150-plus hours they transferred 5,000 gallons of fuel and two Douglas C-1s actually ran 40 different aerial refueling sorties to keep that aircraft alive, or keep it up in the air. They finally had to come down, the Question Mark did, because they started to have some engine failure.

Now this is a story that translates throughout the history of aerial refueling. The other guys get the credit, all right? So Ira Eaker and Carl Spaatz, they both got Distinguished Flying Crosses for this mission, only after the fact, well after the fact, did the refueling pilots even get letters of commendation in their records.

So we've got six generations of tankers here after this first generation of garden hose refueling, otherwise known as you dangle it and I'll grab it kind of interactions in the air. The KB-29, the KC-97 immediately after World War II.

KC-46A Program Status - 9/16/14

The KC-135, over 700 produced -- 400 still in service. Fifty-two years average age. In fact we're very quickly approaching that time frame where there will be no pilot in the inventory -- Active Duty, Guard or Reserve -- who is older than the airplane he or she is flying. So we've got to -- This is not bad, by the way. KC-135, if you know the history, it's not bad for an interim tanker. And if you remember that's why it was purchased back in the late '50s and early '60s, as an interim while the Air Force developed a dedicated tanker to escort the bombers on their strategic missions.

KC-10, about 28, coming on 29 years old average age of the fleet. Any KC-10 drivers in the audience? Okay, a few. How many tail numbers have you flown? Ten. Okay. I've been in recent events where there have been KC-10 drivers in the audience who have flown all 59 aircraft, and a few select have actually flown all 60 of the tail numbers. Only 59 of course still in service.

Then here's our sixth-generation tanker, the KC-46, and that's what our presentation is going to be about today.

Go ahead and click slide please.

Just a quick plug for our crews that are out there. 2,800 tanker pilots in the United States Air Force, Active Duty, Reserve and Air National Guard. About 1,500 boom operators, also Active Duty, National Guard and Air Force Reserve. Every day those crews along with the maintainers, the thousands of maintainers that maintain the aircraft, they push out about an average of 150 sorties a day. That obviously gets plussed way up when we're involved in various contingencies around the world. Refuel about, on average, 450 receiver aircraft. Not just U.S. Air Force, but also United States Navy, United States Marine Corps, allied and coalition partners around the world.

As I mentioned on the first chart, KC-135, 52 years old; KC-10, 28 years old. On average. Those are still operationally relevant platforms but we need to give these crews -- the pilots, the boom operators and the maintainers on the ground -- a new capability.

KC-46A Program Status - 9/16/14

Next chart, please.

I want to talk about our new capability. The KC-46 Pegasus. 10 February this year the Secretary approved the name Pegasus. I've been in the acquisition and sustainment business for about 30 years. I thought that the DoD 5000 series and Air Force regulations 63 series for how to do program management were very very complex and hard to figure out. The popular naming process is equally complex. We spent a couple of years trying to get to the name Pegasus, but thanks to the Secretary, the Chief, and particularly former Air Mobility Command Commander General Selva, we got to the name Pegasus and it has received wide acclaim from across the enterprise.

Next chart, please.

Program of record. The Air Force Association briefings are usually kind of hard to give because what happens is out here in the audience we have a very wide range of people. Everyone from former Air Mobility Command commanders and vice commanders all the way down to ROTC cadets who are walking in here right now to listen to a presentation about a platform that they're going to be flying for decades in the future. So the spectrum of the briefing is, there's a little bit of orientation, but then there's a little bit of gory details in terms of where the status of the program is, so we'll hopefully scratch everybody's itch.

From a program of record perspective we're replacing, as I've mentioned several times, our aging tanker fleets. Just like all of our other tankers it's a multi-role capability. Primary of aerial refueling, but very very capable. The KC-46 is, of cargo packs and aeromedical transport. We'll talk about those details here in a little while.

The program of record is 179 aircraft with delivery of those first 18 tankers by 2017. I'll mention this detail right now but this will become important as we talk later, the contractual date for required assets available, in other words having 18 tankers and associated support equipment with them, is August of '17. The current integrated master schedule that we work with Boeing on shows RAA in March of '17. So the Boeing folks when

KC-46A Program Status - 9/16/14

they established their internal milestones established essentially about 5.5 months' worth of margin at the end of the program between what they thought their ability to deliver RAA was and what the contractual date was. We'll talk more about that in a little while, but I wanted to make sure that was clear.

We're going to production ramp up to, the original program of record was 15 tankers per year, so two years of low rate initial production, seven currently in the first year, and that's in 2015. 2016, 12; ramping to 15; and then 15 throughout the remainder of the program.

If you're familiar with the FY15 President's budget, the Air Force did take five tankers from the 2020s, five KC-46s from in the middle of the 2020s and they accelerated them into the FYDP. So although the program of record was originally 15 tankers in FY17, we now have in the President's budget that's over on the Hill right now, we have 18 tankers. And in FY18 we have 17 tankers. Whether those stay there and how long they stay there is a matter of debate, depending on whether sequestration comes back or we're granted some sort of additional relief.

Better business buying power, I think everybody's familiar with those. We have a fixed price incentive firm contract that was awarded about three and a half years ago, and one of the hallmarks of the program, you'll hear this throughout my presentation and many others on this is stable funding and stable requirements. So I cannot thank enough those folks on the Air Staff, Air Force leadership, DoD leadership, folks over on the Hill both staffers and members, who have ensured that funding stability on this program is paramount.

Last year when we came out of government shutdown, virtually immediately after government shutdown we owed Boeing a very large payment. So in true, I guess, tribute to our funding stability, a process of funds flow within the Department of Defense that normally takes several weeks, we were able to execute on the day the CR was signed in about 8.5 hours. We moved about, what was it, \$260 million out to Boeing to continue to live up to our obligations on the program.

KC-46A Program Status - 9/16/14

Then in terms of requirement stability, there is no fuzz on this at all. The requirements officials for the KC-46 tanker are the Secretary of the Air Force and the Chief of Staff of the Air Force. If I want to make a significant change, if somebody comes to me with a good idea or a bad idea, it doesn't make any difference, and they want to make a change to the configuration of the aircraft, then we have to push it through the Secretary and the Chief. There's a statutory requirement that every major acquisition program has to go through within their service staffs and it's called a configuration steering board. Basically you do it annually with the service acquisition executive and say here are the changes that we have made to the configuration of the aircraft in the past year, or the weapon system in the past year. For the last two years, our CSB has been one of the easiest briefings we've ever put together because I just get to go in to see Dr. LaPlante and put up one chart that says none. That's all it says. It's literally a big none that we put on there because we haven't made any changes. In fact the Secretary of the Air Force is required, if we make a contract change in value greater than \$5 million, we have to notify Congress. At least to date it is the easiest report that the Secretary of the Air Force or that Air Force leadership has to send to the Hill because they send it every quarter and it says none. Okay?

Program team. I think everybody's pretty much aware of this but the KC-46 itself is being built on the 767 line in the Everett facility north of Seattle. It will be modified into its KC-46 configuration there in the Puget Sound area at a finishing center. The Boeing program office is currently at Harbor Point which is really only about three or four miles away from the Everett facility and later this year and into next year they're in the process of moving from Harbor Point over to the Everett facility so they can actually be right next to their aircraft as they go forward.

The Air Force program office, as I mentioned earlier, 160-165 people strong, is at Wright-Patterson Air Force Base. Engineers, program managers, contracting specialists, you name it, financial managers, that's the core team that's managing this for the United States Air Force, thanks to Air Force Materiel Command and the Air Force Life Cycle Management Center.

KC-46A Program Status - 9/16/14

It's a small team but we get who we want on that team. So it's very much a group of A players.

Tons and tons of stakeholders. This is just a small list. Obviously our lead MAJCOM is Air Mobility Command but in terms of MAJCOMs we also work very closely with Air Education and Training Command.

In terms of the test community from a developmental test standpoint, our responsible test organization is the 412th out at Edwards, and then AFOTEC, the operational testers down at Kirtland. We have a lot of interaction with the United States Navy and the United Kingdom especially in recent months as we're getting ready to, or as we're doing the detailed planning associated with our aerial refueling certification efforts, and we have United States Navy and Royal Air Force receiver aircraft that are part of the program.

Very close working relationship with the Defense Contract Management Agency, both on-site there in Puget Sound and also in their regional offices across the country on the program. Lieutenant General Bruce Litchfield and the Air Force Sustainment Center absolutely integral to that partnership that we have with them. Absolutely integral in plotting the long term sustainment strategy that we have for KC-46.

Then finally, there's a very very small DoD office in Wichita, it's the FAA Military Certification Office. It's only about 20, 25 people max. These folks are responsible for the liaison between the Department of Defense and the FAA on commercial derivative aircraft, particularly those that are maintaining their FAA certification throughout their lifetime. These folks have been real heroes in the program in terms of helping KC-46 navigate through the FAA processes to ensure that we can maintain our FAA certification but that we can also do what we want in terms of maintenance and operation of the aircraft. They're real heroes and they've really demonstrated some capabilities in terms of that coordination that I'm sure the Air Force will use on future acquisition programs that are of the commercial derivative nature.

Next chart, please.

KC-46A Program Status - 9/16/14

Top level schedule. Last year when I was here I was ranting and raving or I guess patting myself on the back, myself and the Boeing team on accomplishing critical design review about a month early in August of '13. As we've been producing aircraft and I will go into these deals later, we had originally planned on flying the 767-2C which is the provision freighter variant of the KC-46 in the summer time frame. That time frame now looks more like mid to late November and we'll talk some more about those details.

Then the KC-46 variant, the first aircraft to be converted from that provisioned freighter into a KC-46, first flight was supposed to be early in 2015. Now looking like the April time frame in 2015.

Obviously those two movements of first flights begin to create pressure on our Milestone C decision which is scheduled for about a year from now. We're obviously disappointed in that, but we're not at the point where we think we have any grave concerns about achieving the required asset availability dates out here in 2017. I'll talk some more about this later.

Just a couple of interesting tidbits from last year. In January EMD-1 completed its major assembly. In other words we joined the wings and the body. The aircraft looks like an aircraft. In fact all four aircraft currently, all four developmental aircraft currently look like aircraft. They're just getting a lot of internal work on rewiring and things done. But the Chief and I went out to the Everett facility and we had a celebration about the completion of that major assembly effort on EMD-1. It was the Friday before the Super Bowl last year in Seattle. I'm not sure whether we were celebrating the completion of the manufacturing of the jet or whether it was a Seahawks pep rally, but it was positive in both respects.

Power on for EMD-1 aircraft was completed in June and just for your situational awareness, we anticipate the roll-out ceremony or the debut of the first KC-46 to be sometime here in the first quarter of calendar year '15.

Next chart please,

KC-46A Program Status - 9/16/14

KPPs, I'm not going to go into gory detail on these things. We'll talk about where we're at in terms of status, but for orientation for those folks who are not familiar with the program let me just hit a couple.

A tanker with same sortie boom and drogue capability and that capability extends to all current and programmed aircraft in the inventory.

A range and off-load capability that at the threshold is equivalent to KC-135. KC-46 carries a little bit more gas, about 15,000 pounds more gas than a KC-135, but at the threshold and we certainly expect more than the threshold, but KPP number 2 is equivalent to a KC-135.

Obviously as we've talked about, cargo and pax capability. Every single one of these aircraft will also have a receiver capability, so that plumbing is already in, receptacles will be in. So the KC-46 can be refueled by the KC-46 or by a KC-10 or by a KC-135.

Some survivability upgrades that we'll talk about on the next chart, but really the first time that that has been prevalent in the tanker fleet across a weapon system. And then obviously multi-point aerial refueling capability off the wing area refueling pods.

Next chart, please.

From the business end forward of the jet, 1200 gallon per minute modernized KC-10 boom. Outer mold line of this boom is the same as KC-10, but the guts of it are significantly different. 400 gallon per minute center line drogue system. Both of these are shown in their deployed configuration. I have to say this because we've received questions on it in the past. If the center line drogue and the boom are deployed at the same time that's a bad day. That's not a capability that we're looking to have on this aircraft. But for the purposes of what it will look like that's kind of how we're at.

KC-46A Program Status - 9/16/14

400 gallon per minute wing aerial refueling pods to enable that multi-point that I talked about on the previous chart.

A main cargo deck floor that is reconfigurable, carries up to 58 passengers, over 100 in contingency configuration; 54 aeromedical evac patients, and a huge number of those, nearly half of those, from the standpoint of being able to put not just ambulatory patients but patients on litters. Accommodates up to 18 standard 463-L pallets on that main cargo floor.

Crew positions up front for 15 air crew. Pratt & Whitney 4062 motors. Then probably the most unique thing is the aerial refueling operator station there up front, just eight feet away from where the pilots are sitting. We'll have a chart coming up on that capability here in a minute, but I am basically standing before you as public enemy number one for two groups of people in the United States Air Force because of that aerial refueling station being forward on the aircraft.

Number one group is the public affairs folks do not like me anymore. They don't like me anymore because at the 33 main operating bases for tankers right now across the world, every time a civic leader group comes in or a media type comes in and they get a flight on a KC-135 or a KC-10, the public affairs guys take them to the back of the aircraft and in the KC-135 they put them in the prone position and let them fly the boom. In the KC-10 they sit them down, look out the window right back at the receiver aircraft that's being refueled. Now under the KC-46 design, they're going to have to huddle all those people around a couple of displays there in front of the aero station and they're not happy about it because they loved taking the folks to the back of the aircraft.

In that same vein, the other surprising group of folks who have registered their displeasure about having the aero station is a small group of the boom operators who actually enjoyed being as far away from the pilots as they could be on the KC-135 and the KC-10. So now they're going to be within a stone's throw away and they're terrified of the hey boom, need you to do this. Hey boom, need you to do that.

KC-46A Program Status - 9/16/14

Anyway, if there are any boom operators in the audience, I apologize but I guarantee you this capability is something that you're really going to enjoy.

Also as I mentioned previously, self-protection capability. Obviously EMP hardening for the strategic mission, chem/bio operations capability, and then [LARCM] radar warning receiver, new capabilities for our tanker fleets. Cockpit armor is also. But none of those things representing a true leap in terms of capability for mobility aircraft or large aircraft, just new to the tanker fleet. We've proven those capabilities across many different platforms.

Chart, please.

A 767 cockpit that has some 787 diagonal displays, very nice stuff. The only unique things that I'll talk about here are, as I mentioned previously, situational awareness system we call TSAS, Link 16, radar warning receiver, threat capabilities. This is new to the tanker fleet so we're having to work with Air Mobility Command in the development of their ConOps for this.

I was speaking to a tanker pilot last night on the floor of the expo during the reception and mentioned this thing and the tanker pilot -- I won't tell you who it was. You would know this person. They looked at me and they went hey, if the C-130 guys can figure out how to do a Link 16 and a radar warning receiver, so can we. That ConOps is in development.

Aerial refueling ops will be viewable on the main displays there in the cockpit.

This picture, by the way, is our ECAB or SIL2. It's actually up and operational, full up. Hardware in the loop, human in the loop simulator there down at Boeing field in the Puget Sound area. It's up and operational and being used every day for training and test purposes.

Chart, please.

Aerial refueling operator station. Some really cool stuff here. A primary station and then to the left of it over there an

KC-46A Program Status - 9/16/14

instructor station. Twenty-four inch displays that are 3D, touch screen capability up here above, 185 degree field of view so you can go wing tip to wing tip out of the back of the aircraft using the low wave infrared cameras that are being used in the system. It's all recordable. Offload rate and boom limits are automatically set. If desired, offload and receiver data are automatically captured through the system.

The Boeing folks have a trailer that has a mock-up essentially of this aerial refueling operator station that travels the country here. Been visiting some main operating bases and some other things. If you have a chance to take advantage of that trailer at some point that would be an awesome experience for you.

Chart, please.

I'm going to talk about the development status, production status, test status and sustainment status real quickly for the program.

Development status, here's EMD2. It's out on the flight line awaiting the manufacturing challenges, the electrical rework that EMD1 is going through in the factory and we'll talk about that here under the production status, but just a couple of pictures. This is on EMD1, first installed boom there for a fit check prior to going through ground vibration testing. As I mentioned previously, the aerial refueling capability is a tremendous capability. Hardware and software maturity are completely up to par. In fact this month we're starting, because of that hardware and software maturity we've declared ready for training, so the first group of boom operators are actually training on aerostations there in Puget Sound right now.

Then something I'll cover here briefly on another chart, but one of the tenets of this program thanks to Boeing's leadership and the folks on the government side who established the original contract methodology was to have systems integration labs, robust systems integration labs on the ground to burn down risk prior to flight test. A perfect example of that is one of the five systems integration labs is here down at Boeing Field south

KC-46A Program Status - 9/16/14

of Seattle. It's called the Wet Fuels Lab. And just here in August the Wet Fuels Lab demonstrated the ability to do that 1200 gallon per minute flow rate or offload rate through the boom in the aircraft. So that's risk we're burning down in the program on the ground, versus waiting until we get up in the air.

Chart, please.

Technical performance. All positive at this point. So those KPPs I talked about, the key systems attributes, things like reliability and maintainability, the ability to do formation flight, all of those requirements that we track in this program. And when you take those nine KPPs and those five KSAs they derive out to about 387 requirements on the program. All of those look really good right now. Based on the box level testing that we've done, based on the limited ground testing that we've done, based on the analysis that we've made, everything looks really good from a performance standpoint.

Those five SILs are making their money. They're all ready for test and are helping us burn down risk on the ground. So we have a commercial avionics SIL, a military avionics SIL, we have a SIL2 or the ECAB which was that full up, hardware in the loop, man in the loop simulator that I showed earlier. And by the way, it's not just a cockpit. There's also an aerial refueling operator station tethered to it.

We have the Wet Fuels Lab that you saw a picture of on the previous chart, and we also have a lighting and camera lab. If you're thinking to yourself, why do you need a lighting and camera lab, think about this. There are more lights on the underside of this tanker for day-time, night time, and covert aerial refueling missions than there are antennas on the aircraft, and if you're an aviation guy and you think there's more lights than antennas, really? I mean how many other aircraft in the inventory have that capability?

So the Boeing folks have established a lighting and camera lab to validate, prove and demonstrate those lighting capabilities for all weather, day, night, and covert missions.

KC-46A Program Status - 9/16/14

Integration of military systems. On the weapon, obviously you have some issues like let's just say diminishing manufacturing sources. On the LARCM pods or the LARCM components that you're going to be putting on the aircraft. So we work those issues, but we're closing them at a rapid pace.

Software maturity, about, those of you who are familiar with F-35, we're only about 6.9, 7 million lines of code for the whole weapon system. That's easily a quarter, I guess, if you take a look at F-35's lines of code. But of that 6.9 million lines of code, 86, 87 percent of it is commercial reuse or slightly modified software, and only about 13, 14 percent of it is new software for the KC-46.

Chart please.

Production status. This is EMD1 on the factory floor on the 767 line. As you can see, it looks like a real aircraft. You can barely make out some LARCM fairings down here. You can see the 4062 motor is installed and it's in that familiar shade of Air Force gray.

What we're going to be talking about here on the next chart is herein the forward lower lobe of the aircraft which is also pictured right here is where the electrical rework, the production challenges that we've been talking about on this jet are occurring.

In a commercial version of a 767 freighter there's about 70 miles of wiring on the aircraft. On the KC-46 version, and remember Boeing is provisioning this aircraft on the 767 line, there's about 120 miles of wiring for mission systems and things like that. A lot of that wiring, in fact most of it, is up here in the forward lower lobe. So the orange wire is there for test. That's not the wire we're talking about. But if you look here in the upper left hand corner, that right there are some of the wire bundles that we're having to rework now as part of the electrical recovery program.

This is just that boom for EMD1 in transit. Here in the aft lower lobe of the aircraft, it's empty now, but that's where

KC-46A Program Status - 9/16/14

three of the four integrated body fuel tanks will go below the main cargo deck.

Chart, please.

Shortly after the first of the year the Boeing folks, to their credit, notified the United States government that as part of some design review activity that they were doing relative to drawings and relative to wire, they had found some issues. In fact it was really one of the FAA processes that they were following using designated engineering reps. If this was a purely military program this wiring problem probably would not have been discovered until configuration audits much later in the program.

But the FAA [DER] process identified some anomalies in some of the wire bundles. Those anomalies were essentially for redundant aircraft systems where you want to have a redundancy in an electric system, say to the weather radar or to the radar warning receiver. Wires that represent redundancies cannot be put next to each other in the same bundle. In other words, if you've got a primary, a secondary and a tertiary system for that redundancy, your primary must be in one bundle and your secondary, your backup, your redundant has to be in another bundle that's in a different physical location somewhere else on the aircraft so that if that one wire bundle gets taken out or two wire bundles right next to each other get taken out in some sort of catastrophic failure, that you don't lose that weapon system. It's an FAA requirement, it is a military requirement in terms of being able to do that.

The Boeing folks identified some anomalies so they went and they conducted a wire audit where they went and reviewed 98,000 different wire segments on this aircraft, and in about five percent of those wire segments, a little bit less than five percent of those wire segments, they found some problems. In other words, they had put inadvertently redundant systems right next to each other or too close to each other to meet the FAA and the military standards.

So they reviewed that, they found that in terms of translating in bundles, so what about 1700 bundles on the weapon system,

KC-46A Program Status - 9/16/14

wire bundles on the weapon system, this affects about 350 bundles. And so as the summer, as the spring and summer have progressed, the Boeing folks have been in essence redesigning those wire bundles, remanufacturing them, deinstalling the old bundles and reinstalling the new bundles in a very very cramped area.

This is not big performance issues. This is not hey, we discovered something that's not going to work. This is a compliance issue and it's something that I'd rather handle early in the program than late in the program. Absolutely for sure. It's a production issue that require minor redesign issue. So as you'll hear throughout the rest of my briefing, the United States government is not panicked about it. We are disappointed by it. We are disappointed about it because we are really eager to get into flight test and unfortunately this particular production challenge has chewed into some of our margin, some of our schedule margin on the program.

So schedule performance has got to improve and we're confident that the Boeing folks are going to do that. But if we don't want to impact Milestone C, we've really got to get that provision freighter, that 767-2C and that KC-46 variant up in the air. The next six months are absolutely critical for the execution of the program.

So all EMD aircraft are completed through the major body join process. To their credit also the Boeing folks are like hey, we're going to get EMD number one right, and then based on that design and those manufacturing techniques, those production challenges that we've overcome, then we're going to go do EMD2, EMD3 and EMD4.

So if you take a look at the percentages from the standpoint of production. Right now I'd say EMD1 is 96 percent done and it's just going through those final segments of rewire, rework that's got to be accomplished.

EMD2 probably about 75 percent done. EMD3 and 4 probably someplace in the mid 60s in terms of complete.

KC-46A Program Status - 9/16/14

So EMD number one, when I say 96, 97 percent complete, about a thousand jobs left to get done, and almost all of those jobs relative to rework on the electrical system in order to overcome the production challenges.

Chart.

Test and evaluation program. Our test strategy, as I'm sure many of you are aware, the first and third EMD aircraft will fly off into the test program in the provisioned freighter configuration. EMDs number two and four will go to the finishing center and be the first two aircraft converted into the KC-46A configuration. While they're being converted into the KC-46 configuration, EMD1 and 3 will clear the envelope, if you will, for FAA amended and supplemental type certification. Then all four aircraft will proceed throughout the rest of the test program using a concept we call test once, which I'll describe on the next chart, to get through all the FAA certifications, the military certifications, and verifications and also to qualify receiver aircraft so that we can start IOT&E.

Just down here, both of these pictures from the standpoint of live fire test and evaluation. Great stuff going on at China Lake. Seven of our ten live fire test and evaluation sequences, test series are complete. So we're doing great from the standpoint of getting through those.

As you can imagine, unlike a lot of weapon systems acquisition programs for the department, you don't have to really build test articles for a KC-46 program when the fuselage is based on a 767. There's been over a thousand produced on the line there at Everett and so there's plenty of test articles available for us to use in the program.

Chart.

The test one strategy will be using FAA DT and OT representatives to accomplish single test events for score and taking credit for FAA certification, DT and OT kind of things. All four aircraft will be used, as I mentioned earlier, first flight for the

KC-46A Program Status - 9/16/14

767-2C, currently mid to late November. First flight for the KC-46 early April. And live fire's going great.

Chart, please.

Sustainment status. This is just some of our support equipment. 750 to 800 pieces of support equipment. About 75 percent of it is commercial. About 25 percent of it is Air Force unique. Some of it is combo. These are the warps trailers. This is a standard military trailer there on the upper left and a unique cradle that we'll put on it for the warps trailers. Immediately to the right there you'll see the engine trailers. We worked very closely with Boeing and Pratt & Whitney. There were lots of engine trailers out there for the 4062 motor. Most of them were on casters. AS those of you who are familiar with the Air Force flight line environment, casters on the flight line don't work, so we had to work very carefully to get some engine trailers that had some substantial wheels or tires on them so that we could move them across the flight line. Then a radio test set and start cart there, standard 767 commercial used equipment.

Chart.

100 percent organically managed. I've talked about this a number of times in the past. But that doesn't mean we're going to be 100 percent organic. It just means that the Air Force is going to make the decisions for this weapon system relative to what components are repaired organically by the Department of Defense and what components are going to be repaired commercially. Obviously 800 plus 767s out there still flying today around the world. There is considerable capacity and capability out in the industry in order to do commodities level sustaining engineering, supply chain management for the weapon system.

Also as I mentioned earlier, relative to the military certification office, meets the intent is our work that we're doing with the FAA so that we can do work in our depots on the weapon system and still meet the intent of FAA regulations and therefore maintain the FAA certification of the air frame throughout its life. That brings great benefit to us from the

KC-46A Program Status - 9/16/14

standpoint of being able to leverage engineering support, service bulletins, air worthiness bulletins through FAA processes.

Tech data will be in S1000D format, fully interactive tech manuals. That's a really cool feature. And right now we have our ongoing product support BCA that's helping us determine supply chain management, sustaining engineering and commodities into the future.

Just a couple more charts.

I think I've already talked to this.

Chart, please.

Air crew training system. Contract awarded last spring to Flight Safety Services Corporation. EMD deliveries planned in the 2016 time frame. Critical design reviews successfully accomplished throughout the summer for the various aspects of this program. So we think air crew training system is on track.

Next chart.

And draft RFP release, for those of you who are interested, for the maintenance training system, we're anticipating that here this month and then contract award for the maintenance training system to be about a year from now.

Chart, please.

We're still a top three modernization program. Requirements and funding stability have been great on the program so far. We have, for those of you familiar with the acquisition business, we have a program here that's this size, 50 billion dollar program over its development and production life cycle, and no engineering change proposals to date.

Our government financial liability is capped at 4.9 billion dollars. We've got a great plan to do testing. We've got great labs in process that are burning down risk. And we're confident that we're going to overcome this recent spate of some

KC-46A Program Status - 9/16/14

production issues but that doesn't mean we're not disappointed in it. But we're confident that we'll overcome them, and we're really, really eager to get this aircraft up in the air.

With that, I think we have time for a couple of questions.

Moderator: We don't have. We're about five minutes over.

Maj Gen Thompson: Let me volunteer this then. I will set up shop right here outside the door and if you have burning questions and you can wait, please give me a few minutes and I'll try and address your questions.

Moderator: Thank you, General Thompson. These are some questions, some very good ones. He has prophetically answered about three-quarters of them already in the slides. But thank you for making the effort to make the questions. This is a very critical program, one that the Air Force needs desperately. So thank you General Thompson.

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