"KC-46 Requirements"

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Major General Thompson: Thank you very much.

As you can tell by the monitors that are up here next to the stage, they're pretty tiny. As a card-carrying acquisition geek I have a lot of very complex charts in my briefing. So I think what I'll do, although we'll follow along with the charts, I'll turn this into a speech so that you all can hear everything, all the messages that I intend to send.

First of all, as Ed mentioned, under the Air Force Life Cycle Management Center standup, the KC-46 Directorate at Wright-Patterson Air Force Base became the Tanker PEO, so I also have responsibility for KC-135 and KC-10. That may sound really impressive to some people, but after General Moore's first townhall meeting several weeks ago, on the way out one of my captains stopped me and said hey, Tanker PEO, that sounds pretty impressive. All three of those aircraft. But sir, doesn't that make you "the gassy general? "?" From that perspective, I have a good captain that's looking for a job, so anybody that's interested in hiring him, I can hook you up.

First of all, let me introduce a couple of my team mates here that I'll talk about throughout the presentation. First of all, the Director of the A5-8 on the Air Mobility Command Staff, Major General Wayne Schatz who is sitting here in the front row. And then also my Boeing counterpart, Ms. Maureen Gardy, who arrived on a redeye this morning from Seattle, Washington. I assume you came in from Seattle. In any case, thank you all for joining me here today. I appreciate the team spirit and the support as we go through this.

I've been on the job about five weeks. I wanted to just kind of walk you all through the program in terms of an overview and then the current status of the program. I've been at these kinds of events enough to know that you need to baseline up front kind of what you're talking about because you might have a significant number of ROTC cadets or whatever in the audience. But then you probably also have some dyed in the wool industry folks who are interested in the details. So I do have a program assessment at the end that perhaps you can sink your teeth into from the standpoint of the program status.

Next chart.

Just in terms of a program of record, I think everybody here should be familiar, if you're not, 179 tankers that we need to begin replacement of our aging and venerable KC-135 fleet. Multi-role capability, aerial refueling, cargo, passenger and aeromedical evacuation capability. Contract award for development was in February of '11. On track to deliver 18 tankers by 2017. Our production ramp-up is fairly aggressive but achievable in that we'll go to 15 per year and then close out production of all 179 aircraft in the 2028 timeframe. Production actually concludes in 2027, but deliveries, if you're thinking that far out, don't occur until a year after production conclusion.

Boeing is obviously our prime contractor, building in Everett, in the Puget Sound area doing actual KC-46 modification. We'll talk about that here in a few minutes. Maureen's office is in Harbor Point, Washington. Mine is at Wright-Patterson Air Force Base. There is something inherently unfair about that given the views from the windows that we have in our offices, but I won't hold that against you, Maureen.

Lots and lots of team mates. With a program this large you're going to have stakeholders all across the federal government and industry. Air Mobility Command and AETC, obviously my using customers. Lots of Air Force stakeholders including the Air Force Test Center and the 412 Test Wing out at Edwards Air Force Base. They're our responsible test organization. Also DCMA, Defense Contract Management Agency, very closely partners with them in terms of executing the contract.

Outside of the Department of Defense, though, we also do a lot of work with the Military Certification Office of the FAA who has really stood up very strong for us on this program and done a lot of great work for us so far. Lots of great work left to go.

Also I have to highlight, and I don't see Lieutenant General Litchfield in the audience, but the Air Force Sustainment Center at Tinker Air Force Base has been instrumental in helping us begin depot activation, begin provisioning and tech order development for the weapon system as we go forward.

Next chart, please.

Some key milestones. We're about 18 months into our development program. System requirements review, integrated baseline review, system functional review, all complete. Lots of press earlier this year in the April, early May timeframe with the completion of our preliminary design review chaired by Major

General Bogdan. All great stuff and we're on track for critical design review in the fourth quarter of next year. I highlight that on this chart only to say that those of you who are familiar with this business know that there is a possibility to have in the program 50 number one priorities. I have never believed in that concept. I'll have a lot of number two and a lot of number three priorities, but my number one priority for this program is to successfully get through the critical design review next year.

So just like in real estate it's location, location, location. For me in this program, first look is CDR, CDR, CDR. That's what I'll focus on.

Our provisioned 767 2C freighter, first flight scheduled in the middle of 2014, then a KC-46 EMD aircraft number two, first flight will be in early 2015. We'll talk a little bit more about that on the charts to come. Two lots of LRIP at less than 15, which is the full rate production quantities. Seven and twelve for LRIP 1 and 2 respectively. The first LRIP delivery in 2016 and then 18 aircraft or required [inaudible] if it's available. RAA, as many of you are familiar with, in the middle of 2017. Then production out through, as I mentioned earlier, 2027.

Chart, please.

For those of you who aren't familiar with the configuration development on this aircraft, obviously a commercial derivative. We start with the 767-200ER already type certified, commercial passenger aircraft. We add to it some DASH-300F series wings, DASH-400ER auxiliary power unit. Some doors, some tanks, some cargo features, and we turn it essentially into a 767-2C freighter which has the structural capability to do the tanking mission. We add to that all in the Everett facility there in Washington, body tanks, freighter cargo door and floor, an enhanced flight deck. We'll talk a little bit more about that later. It in essence becomes our baseline military aircraft and the FAA will grant us an amended certification on that aircraft before it leaves Everett as well. It will also have provisions for all of the tanking systems necessary for it to become a KC-46.

When it comes out of the factory there at Everett it will essentially fly over downtown Seattle and land at Boeing Field to the south of downtown Seattle where at our finishing center at Boeing Field we'll turn it into a KC-46 by adding the refueling systems and the military avionics. It will achieve a supplemental type certification at that time, and then a number of other military items all wrapping up for a military certification for KC-46. Some of the things that will go on there at Boeing Field is adding the booms, the wing air refueling

pods, center line drogue system, LAIRCM which I'm sure many of you are familiar with, and our pallet system. Interestingly, from the FAA our certification basis for the amended type certification was granted this past summer. We're on track for a supplemental type certification in early '13. I think we're targeting February timeframe of '13. Then a military type certification basis approval in the summer of next year.

Chart, please.

KPPs, there's nine of them, obviously all JROC approved. Our CDD contains nine KPPs and five KSAs. Those all translate into 387 requirements on the contract relative to the performance of the aircraft. 372 of those were in the system requirements document and then Boeing proposed an additional 15 requirements that are now on contract.

At the KPP level, these nine KPPs result in almost 120 unique system spec requirements and right now granted 18 months in the EMD so only about 21 percent done. Boeing currently meets or is projected to meet all of the requirements on contract.

I won't go through these in detail, only to say that the results of these KPPs have a very long and storied past. For those of you who are familiar with the whole KC-X journey, they are based on what we need to replace the KC-135 fleet and they are all achievable.

Next chart.

Some key features, and I'll go from the business end of the aircraft which is the back end from an aerial refueling standpoint to the front end. But obviously a 1200 gallon [inaudible] modernized fly-by-wire KC-10 boom. It's essentially an outer bolt line of the KC-10 boom but the guts are totally different. Very much updated and very much modernized from a fly-by-wire perspective.

Centerline drogue system is 400 gallons per minute capacity. When installed, the wing aerial refueling pods are also 400 gallon per minute capabilities. Obviously passenger, aero-med capability, cargo capability, the standard 463L pallets, has a receiving capability of also 1200 gallons per minute up front, and from a self-protection standpoint some EMP hardening obviously for some of the mission sets that the jet has to fly. Chem/bio capability to operate in that environment. LAIRCM and a radar warning receiver, plus cockpit armor is planned for the aircraft. All that pushed along by Pratt & Whitney's 4062 engines each generating 62,000 pounds of thrust.

Chart, please.

Digital glass cockpit. Very nice, 15 inch diagonal pilot displays right out of the 787. Weather radar and flight data, all displayable. VHF, SATCOM, ACARS, ABCCOM, TSAS with Link 16, and then aerial refueling is visible from the cockpit which is a really neat feature and something that the crews are really looking forward to.

Chart, please.

The aerial refueling operator station, dual interconnected control switches on the right hand side. You can essentially fly the boom and on the left hand side you extend the probe with the sticks. A 24 inch display in the middle with a 3D viewing picture and you got, yes it's true, you've got to wear 3D glasses to use it. Instructor station up above, 185 degree panoramic field of view. Obviously offload rate and boom limits are automatically set. If you haven't had an opportunity, if you're interested and haven't had an opportunity to visit the Boeing trailer over here which is 50 yards that way, I would highly encourage you to go over there and sit down inside the trailer that they brought. You can actually fly the aircraft and from a mission perspective you can also refuel from an aerostation that they've got in the trailer. It's a pretty neat capability.

Next chart, please.

Aerial refueling capabilities. 212,000 pounds of fuel, a little over 200,000 pounds, 204,000 pounds to be exact, operational empty weight.

As I mentioned before, an advanced fly-by wire boom, has a boom envelope about three times the size of what's currently on KC-135. So in terms of an envelope it's about 6,000 cubic feet. It's pretty impressive.

Center line, hose and drogue refueling so that you can do boom and drogue on the same mission. Multi-point refueling. When the warps are installed to enable simultaneous refueling for probe-equipped aircraft. Obviously you can do, it's not just a gas giver, it's a gas taker from an AR receiving perspective. It gets you extended range significantly, and then also enables some significant increases to on-station performance in a combat environment.

Chart, please.

Then multi-role capabilities. It's a little bit bigger than a KC-135, the aircraft that it's replacing. Between 15 and 20

percent dimensionally larger, but three times the number of pallets capable, two times the number of passengers. Typically 58 passengers on the KC-46, but in contingencies can flex up to 114. Aeromedical evacuation is about 30 percent more patients. So a pretty impressive capability that has successfully made it through preliminary design review and is on track for detailed review of the baseline at CDR next summer.

Chart, please.

I apologize in advance for this chart. I was expecting some bigger view screens. My bad, not the AFA's fault.

But from an EMD perspective, this chart just represents our developmental test kicking off in the 2015 timeframe. We'll also do receiver qualifications, as many as we can, through that period and AMC has given us the priorities for the aircraft that need to be receiver qual'd during VTE.

We'll take a pause in 2016 and refurbish the EMD aircraft by making amended type, supplemental type cert changes. We'll do any changes that we've identified during flight test. We'll remove the flight test instrumentation and return the aircraft to a standard production configuration, then those four EMD assets will go into IOT&E. We'll complete IOT&E by the end of 2016, then those aircraft will go back in and finish the receiver quals throughout 2017. At the end, though, our intention is to totally zero time them so that we'll perform a heavy maintenance check. All the maintenance that's required on them and incorporate any air worthiness directives that we get from the FAA or from the Air Force at that time.

The middle part of this chart displays our DD-250 for our aircraft out through 2021. So you can see in terms of deliveries by the end of this decade we should be up around 60 aircraft out in the fleet. Then down below you'll see, as we stand up FTU and MOB's one and two, what kind of timeframe. Those are obviously 2016 is FTU and MOB standup. And then in the late 2017-2018, early 2018 timeframe we'll worry about MOB number two.

Throughout all of this our contract has options for interim contract support. Five priced options. But as we'll talk about here in a minute, the Air Force's intent is to go to organically managed support for the weapon system and so we'll use those ICS periods as required to assist in standing up organic capability.

Chart, please.

Our test and evaluation strategy is, and this is JT's initial perspective with five weeks on the job, is more

integrated than I've seen on any other program, at least within the last decade.

We have Boeing, FAA, developmental and operational test agency involvement right now in our integrated test team. In fact there was an ITT last week that had nearly 70 participants from all over the DoD and the federal government along with a contractor base. Our goal is one program, one plan. We're maximizing parallel testing so that we don't have to do FAA testing and then follow it up again with DoD testing that is identical to what has already been accomplished. So max effort in terms of avoiding duplication and redundancy in the flight test program.

As I previously mentioned, four dedicated EMD assets. We're going through a concurrence certification process as I already talked to for the ATC, the FTC and the military type certification. We've got early operational test involvement. In fact AFOTEC has already established and begun to man the detachment up at Harbor Point in Washington. There are already two or three folks that are there from AFOTEC because later this year they'll do their first operational assessment of the weapon system, primarily a paper, obviously, operational assessment, reviewing the design work and other aspects of the program.

We have parallel live fire test and evaluation which we've already started and I'll talk about that here in a few charts. Then as I already kind of walked through, a multi-phased receiver certification game plan, priorities for the weapon system, primarily derived from the envelopes that we want to test the refueling mission from. Our F-16, F-18, C-17, A-10 and EC-130. I think that's all I really want to talk about on this chart.

Next chart, please.

From a sustainment and supportability standpoint, as I mentioned previously, our goal is to go to 100 percent organically managed sustainment on this weapon system, but there are supportability requirements on the contract. The contract states that those will be achievable at the 50,000 cumulated flight hours timeframe which we anticipate to be in the late 2018, 2019 timeframe.

You can see what we put on contract in terms of operational availability, mission capability, PMC, those things there, all agreed to by Boeing and the requirements established by Air Mobility Command. Early in the program obviously EMD were very much reliant on Boeing for our O level depot maintenance and supply. But as you can see, as we get through early fielding

we'll work through the transition and long term we'll go to 100 percent organically managed.

A lot of people have asked me what the phrase organically managed means. They're used to the phrase 100 percent organic meaning that the Department of Defense would do everything. But even on those weapon systems where we are 100 percent organic, by that definition, we still do a lot of contract work. We still flow a lot of things, a lot of piece parts out into industry. We still partner with industry on many many aspects of the program. So from just a terminology standpoint, we thought it was unfair to say 100 percent organic when in fact our contractor partners will be part of it. The Air Force will just lead it. So we added the word managed. I hope that doesn't offend anybody from either the DoD or the contractor base, but that's the logic behind the wording that we're using.

Chart, please.

From a program assessment perspective I'll just say that we're currently in a good place from a cost, schedule and technical performance standpoint. Everything is stable. But again, we're only 20 percent into the development program. Those of you that have been around this industry for a long time know there are plenty of opportunities as we finish executing the other 80 percent for challenges to come before us, both on the industry side of the equation and the contractor side of the equation.

The thing that I will tell you though is that the challenges that we see, the risks that we work to right now in the program as we're between PDR and CDR are very much typical for a development program and perhaps even better from the standpoint that we're able to work from a commercial derivative standpoint versus a pure military use weapon system.

Requirements and funding stability are obviously imperative to the program. I see the Early Bird every day. I understand the posturing going on within the Beltway and outside the Beltway on sequestration. But I'll tell you just like every other program manager in the Department of Defense I'm sure, I'm in the back room running drills on what sequestration is going to do to my program, and depending on how it's implemented, it's not a pretty story. It's near catastrophic.

So sequestration is a definite risk to the program, but it's a risk that comes from the outside. As I progress towards CDR I'm primarily focused on inside the program from an execution standpoint.

Our risks are manageable. Our live fire testing is underway. I've got a chart on some of these coming up.

The Boeing folks and the government program office long before I arrived decided that some system integration labs to support the program would be essential to managing technical risk in the program, and my first blush here is that they're absolutely a godsend and will be a godsend as we get further into the program. It's a truly inspired strategy that the government contractor team came up with in order to address risk.

Boom manufacturing, we'll talk a little bit about that and then the transition. As many of you know, Boeing announced the closure of Wichita and the movement of our boom manufacturing and finishing center work from Wichita to the Puget Sound area, so we'll talk a little bit about that. Then as I've mentioned three times already and I'll probably mention it five more times in the briefing, CDR is my number one priority.

Chart, please.

Live fire test and evaluation started at China Lake in the summer timeframe, late summer timeframe. So we've already caused fires on the aircraft inside the wing dry bays. The results, the analysis is ongoing of that. We'll also do some fuselage dry bay fire work at Wright-Patterson Air Force Base later this fall, so we are actually doing things to this aircraft. It's not all on paper anymore. We're actually in the case of live fire test, trying to break things.

Chart.

I mentioned the system integration lab work previously and we just got our sill zero or our provision freighter, our 767-2C avionics and software box testing capability up on line. The Boeing folks stood that up a month earlier than anticipated. It was supposed to go in October but I think the first week of September we actually started running boxes on that sill at Boeing Field. Sill number one, which will be more military oriented and more KC-46 oriented from an integration perspective is I'd say a couple of weeks behind schedule. We were hoping to get it up and running in October. It looks like we'll get it up and running in the November timeframe. But still basically on track. Both of those system integration labs will field what we're calling sill two or the ECAB which is a high fidelity pilot and aerial refueling operator in the loop flight simulator. That's not just on paper. It's got a lot of work to go to put the boxes in there, but if you visit Boeing Field, it's actually there. It's built and ready to go. They're actually doing some work on it right now with respect to color pallets and things

like that inside the crew compartment that best support covert refueling. So it's pretty cool how they have that set up.

Then in the 2013 and 2014 timeframes respectively we'll set up a wet fuels lab out there in the Puget Sound area that will test our inerting system and our wing area refueling pods. Also very unique wet fuels lab, typical wet fuels labs will work with water or some other kind of non-flammable liquid. We're actually going to use JP8 in our wet fuels lab so it's pretty impressive.

The lighting lab. The lighting on this program is really a tremendous challenge, something that the design will have to take into account for. So by establishing lighting so that we can do day time refueling, night time refueling, covert refueling, lighting and all of the aspects associated with it have to be tested out and in the March 2014 timeframe we anticipate that that will be stood up.

Chart, please.

I don't have any hardware with me today but this is at least photographic proof that we are beginning to bend metal. This is some boom skin machine that started the August timeframe at Spirit outside of St. Louis, Missouri. So if anybody tells you it's an all-paper airplane at this point you can just point at them and go liar, it's not. But obviously we're on the beginning end versus towards the end of actually bending metal. Lots of work left to go.

Chart.

The Wichita shutdown and the transition plan to move stuff out to the Seattle area is underway. Boom assembly has been relocated. If you're familiar with the Boeing Field area just south of downtown Seattle and you know where the Navy does its P8 finishing there at Building 1401, we've confiscated a small corner of that and have begun to stand up the boom assembly capability. We'll have a ribbon cutting there in the October timeframe and expect the first load just a couple of days after we do the ribbon cutting.

The finishing center location will begin in '13 and complete by the end of '13. We anticipate the first load to be in the summer timeframe of 2014. These, both the boom assembly and the finishing center are not permanent locations. They'll just be used for EMD and we're following very closely what will happen after that in terms of where these, for production, where these capabilities will actually be stood up. It is a risk to the program, but something we feel is manageable at this point.

The move also requires a lot of FAA production approvals so there's a lot of close coordination between Boeing and FAA on the Wichita transition. Also on the standup of production capability at some point in the future after EMD. We flight follow that from the government program office very closely.

Chart, please.

Number one priority. Critical design review. We need to validate the detailed design. We drafted a charter, a very comprehensive charter. I've not seen a more comprehensive charter in my 25 years in this business. We're executing an incremental approach. I'll talk a little bit more about that on the next chart. But we've got essentially supplier level CDRs going on throughout the fall; an air system, if you will, for the provision (inaudible) CDR in the December timeframe which will be a huge indicator for us with respect to how much confidence we have to getting the CDR next summer. Then major subsystem CDRs will go on throughout the spring.

We have detailed entrance and exit criteria. That's all on contract. And as I've also mentioned several times, we're really significantly leveraging commercial FAA type certification throughout the whole process.

Chart, please.

This is a little time line chart that I always like to show. It kind of shows where we've been over the last few months and where we're going over the next 12 months. I've talked a lot about CDR and kind of where we're at. From a schedules perspective I also wanted to highlight a couple of other things that we're doing over the next year.

But again, as important as these things are, and those of you who are familiar with the business know how important this stuff is. Again, on my list they're number two or lower. Number one is getting through CDR. We've got a temp that we'll resubmit to OSD in the October timeframe. Obviously I already talked about boom assembly. We will redo our program office estimate this fall to support our selected acquisition report that goes over to the Hill early next year. We have the operational assessment from the AFOTEC folks, number one. That goes on, starts in late October and goes to the end of the calendar year. We have a quarterly update with the defense committees and a quarterly update with Mr. Kendall and his staff that we execute just to keep Washington stakeholders informed on progress of the program.

Our air crew training system contract award we currently anticipate to be accomplished by the end of the calendar year. And we have a number of manufacturing readiness assessments that will be accomplished here between December and February of next year.

However, all of that stuff you can see sprinkled in there, all of the stuff that I talked about on the previous chart, all of the subsystem levels, component level CDRs, the air system level CDR for the provision tanker, and then the major CDR currently scheduled for next summer.

It's important to note here, you'll see on the bottom of the chart that we're currently looking at a July of '13 timeframe for that KC-46 weapon system CDR. That's a couple of months before the contract date. So I think the contract date is 1 September of 2012 (2013); right now we're on track for a couple of months earlier than that. All of the subsystem component and air system CDRs that we have planned between now and next July though will inform us as to whether we stay on track for that early date of next July. It's our intention to do that, but as you all well know in execution things sometimes crop up, we have to work through them, and when we work through those things we'll deal with it and see how that impacts our schedule, if at all.

Next chart.

In case you haven't heard, CDR is my personal number one priority for the program. Cost schedule and technical performance are stable. We're thinking we're in a good place right now. We've had no engineering and contract changes to date, and none currently on the horizon that we anticipate. Boeing and their team is executing in the fixed price environment. But I will tell you there are always risks in an EMD program. I don't want to get up here and sound like I'm Pollyanna. We know that there are schedule risks, cost risks, technical risks that are manageable in the program and we'll continue to manage them. We've got a lot of hard work ahead of us. The fixed price arrangement that we have with Boeing is not an excuse for the government to stay hands off and not be a program manager. I work with Maureen and her team. My team and Maureen's team work hand in hand every day to deliver the KC-46 and a lot of the conversations we have are not what I would call pleasant. We have challenging, difficult discussions and we work through them because we're professionals and that's what we do.

We have a great contractual vehicle. Don't get me wrong, but it's not an excuse to not manage the program. We're properly resourced. I think we have a very strong team. In fact if I could say one thing to General Bogdan, I know he couldn't make it

today. I've known him for many many years. He has some tremendous skills. He's a great leader. But one skill that he has that I didn't know he had was he hired into the program office a lot of A+ players. So I have a fairly small program office but I'm able to execute this program and work with Maureen every day because I have A players in the program office and I'm tremendously appreciative to him for setting me up in that positive light.

I think that will conclude my formal presentation. I'll be happy to take your questions. I'm really looking forward to getting into this program and delivering some warfighter capability on day one, successfully executing CDR and all the milestones after that.

Thank you very much.

Question: You indicated that the KC-46 training system was not scheduled to be on award now until the end of the year. It had previously been estimated by the end of this month. Can you comment on why you anticipate a delay?

Major General Thompson: As you know, we're in the middle of a source selection. I really don't want to comment on any of the specific details. We have a lot of work left to do. We have a lot of good interaction with offerers and we just anticipate it taking until the end of the calendar year to make it happen properly.

Question: Why do you need to establish a depot for a fleet of aircraft that has very few numbers until 2020 and beyond? Wouldn't a PBL or partnership sustainment be cheaper, especially since the aircraft and engine were basically commercial?

Major General Thompson: Perhaps cheaper in the short run, but in the long run I think what the Air Force has determined is that 100 percent organic management is a best value approach for us. And I will tell you from lessons learned in many other programs, if you don't do that depot activation work up front it's very hard to get to it in the later stages of the program.

So the Air Force Sustainment Center folks at this point are our very close partners on this program. As I mentioned in my presentation, they're helping us in numerous facets of the program. Depot activation just being one of those facets.

But as I also mentioned, 100 percent organic management doesn't mean that the Air Force does everything. It means that we work closely with our partners and we have the lead role.

Question: What's your strategy to avoid any change activity that could cause you to break the fixed price nature of this contract?

Major General Thompson: Just say no. How about that?

Question: I'd like something more realistic.

Major General Thompson: In terms of a strategy, that's one of the things that I have put on my to do list for the first six months of the program. As I mentioned, we don't have anything that I would anticipate at this point. There's certainly nothing on the horizon from a major change perspective. But having the Air Force Service Acquisition Executive who happens to currently be the Secretary of the Air Force as my level one change manager gives me at least an initial strategy of tread carefully and manage change as you may need to in later phases of the program.

EMD is only a little over 20 percent done, 21 percent I think, if you look at our EB data, so we know we have about 80 percent of the program to go. I'm not saying no changes, I'm saying carefully manage and then when one comes up that we have to work, we'll work it as a team and then we have to take it through the appropriate leadership vetting before it's approved.

Moderator: Sir, thank you very much. This is a great program and it was a great presentation.

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