TRANSCRIPT

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Gen. James M. Holmes
Commander, Air Combat Command

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DWG: First and foremost I want to say thank you to our guest, General James M. Holmes, Commander of Air Combat Command. They call him Mobile. This is his first visit as ACC Commander with the Defense Writers Group, so we do appreciate you making the time. I'm sure it's a very busy schedule for you to come and sit down with us.

General, I wanted to ask you a little bit about survivability. Secretary Wilson has commented recently that improvement in Chinese and Russian Air Defense systems will basically mean a JSTARS, even an upgraded JSTARS wouldn't survive the first day of combat in all likelihood. So part one of this question is, what do you do about that? And part to of the question is, what does that mean for your other large aircraft? AWACS. I know you don't own the tankers, but there's other combat aircraft that have to operate near a battle space. How do you keep them safe and relevant?

General Holmes: As you guys understand, we certainly depend on a bunch of support from larger airplanes to be able to cover long distances and to be able to get everything that we need forward to be able to operate the way the joint force expects us to.

There are new threats. They do make it harder. I'd say it's not a one or a zero of you're survivable or you're not. You're more survivable and you're less survivable, and you have to fight to be able to get up there and stay.

One of the things that complicates JSTARS is that it's driven by the radar equation of the power and the line of sight. One over to the 4th. If there are engineers in the crowd here that means for every piece of energy you put out from a radar, what you get back is divided by the radius to the 4th power. And so that radar equation means you have to get JSTARS in closer than you have to get in a lot of other things to be effective. So it's a question of how close can you get systems? How hard do we have to fight to get them

there? How many resources will you have to use to defend them there? Then can they get close enough to be effective? In our judgment, JSTARS is going to have a hard time being able to get close enough and stay close enough to be effective because of that radar equation, where other things are limited maybe just by line of sight or tanks, not even by line of sight but by being close enough to be able to get combat systems to the fight.

DWG: And as you make out your budget priorities going forward, what does this mean for replacing the JSTARS capability?

General Holmes: It means that we think we can spend that money more wisely by getting to an ability to find ground targets all over the world all the time by linking the things that we have together and by acquiring new things that we would link together instead of by continuing to get our awareness of the ground in a plus or minus 60-degree wedge, 160 miles deep. We think there are better ways to do that, starting with tying together all the resources that we have and being able to understand what they're showing in real time, and then working towards fielding new sensors in new ways to do that, and we think we're ready to go ahead and move toward that now, and not recap a capability that will only be marginally more capable. We'd like to get to a leap in capability instead of a marginal capability leap.

DWG: General, can you talk about the A-29 crash at Holloman Air Force Base? What are the preliminary indications of what caused it and what does it mean for the light attack experiment?

General Holmes: The purpose of this second light attack experiment was to fill in some data points from the first one. They were largely focused on what will it take to support the airplane, and what kind of sortie rates can you fly with it, and how would you budget for a program on the sustainment and the support side?

So we're flying the two airplanes that we wanted to take a look at, the A-29 and the AT-6, and they've been flying down there since May to start working on those data points.

I can't really say much about the accident because there's an accident board, a safety board that's stood up and we use safety privilege to protect the people that were involved there. We're proud of the whole team that are down there, have been flying in the exercise. We're certainly very sad about the loss of Lieutenant Chris Short, a great aviator who's dedicated to trying to find out what the answers were about can se use this airplane in some circumstances to free up our more sophisticated fighters. We'll let that safety board work through their mission and report back to us on things that we can learn for the future of the experiment.

Air Force Materiel Command and our acquisition agencies led by our Strategic Development Planning Office, SDPE, are working through do they have enough data from this experiment or will they need more, and will we need to go ahead and do more

or do we have enough now. And we'll decide on what the future is of the DV Day sometime in the next little while.

DWG: Just so I'm clear, is it possible the light attack experiment will be delayed or --

General Holmes: Those are decisions that they're working through now and I don't really have an answer for you yet.

DWG: Good morning, General. I wanted to ask you, what is the time line for F-35 transfer to Turkey? I saw press reporting saying, claiming that that will take place in March 2019. Then I saw the words saying that it will take place in November 2019. And then the Turks were mentioning 2020. So which ones are accurate?

General Holmes: Dmitry, I'm going to tell you that's a policy issue that will be determined in the White House and in the Congress and not in Air Combat Command. So I think we'll have to wait and see what they determine.

DWG: Okay.

Has there been any contacts between SU-57s and F-22s over in Syria? And what can you tell us about this in an open setting if there were any?

General Holmes: We've had them deployed there in the Middle East. The Russians made a brief deployment of the airplane down. All I can really tell you is they were there in the same theater at the same time, but I'm not really going to talk about that one either.

Have you got another one? You get three strikes.

DWG: Thanks. Space Corps, whatever you want to call the new branch. Does this plan imply that you're going to be deploying offensive capabilities in space? The United States.

General Holmes: Dmitry, the Space Corps is another policy issue that Air Combat Command's not going to decide on.

We have made a couple of moves in our more recent budget. One of them is moving toward multi-domain operations and our focus on bringing all domains together to try to be successful in the joint fight. And the other one is accelerating the tools that the United States will need to operate in space as a contested environment. So I think there's recognition in our country and other countries that space is a contested environment and the Air Force is trying to work to make sure that our nation has the resources and the tools to be able to operate in that contested environment and beyond that. That's all I'm going to talk about.

DWG: Are you concerned at all that Congress might not fully fund efforts to create an advanced battle management system?

General Holmes: All of the, from what I've seen of the read-out, from all the committees, all the committees understand the need for moving to an advanced battle management system. If there's disagreement between the committees it's about whether we can move straight to that and hold onto our legacy JSTARS as a way to bridge until we get there. Or do we need to do one more recap of that system. So I think all the committees recognize that where we're trying to go is the right place. It's a matter of how fast, and whether we do an intermediate step in between.

DWG: First of all, I wanted to follow up on the A-29 crash just to clarify some details. Am I correct in thinking that the experiment has stopped right now? It's not going on?

General Holmes: We suspended flying operations while we stand up the safety board.

DWG: Okay. And my other question has to do with JSTARS as well. Are you moving forward with the current JSTARS plan? I understand that some of the final [inaudible] going to come back to you, and when would you expect a contract to be let?

General Holmes: Without presupposing the will of Congress, we made sure that we took all the steps to be able to go forward with the recap program if Congress tells us to, so we kept those programs on pace.

I think the timing of that will depend on the timing of the decisions that come out of Congress. But we kept the program office there. We kept working through the source selection process and we wanted to make sure that we didn't interfere with Congress' decision-making authority while we continued to advocate that we think the right answer is not to do that and to go forward with the advanced battle management system instead.

DWG: So assuming that Congress told you to go ahead with it, at what point would the contract be awarded and how many JSTARS?

General Holmes: I think you'd have to ask those questions into AQ and into Air Force Materiel Command on exactly when they'd be ready to go forward with the contract, but they kept the workers there, and they've kept the capability to do that.

DWG: So [inaudible]?

General Holmes: AS far as I know, yep.

DWG: Good morning, General. We're about a year into the directive to improve readiness. I wonder if you could walk us through some of the major leading indicators,

[inaudible] mission capable rates, depot time, flying hours, those kinds of things. What kind of progress are you making? Is it fast enough? And if you're not happy with the rate, what are the impediments to getting where you need to go?

General Holmes: Thanks, John. There's a lot there.

The investments that we made, if you look at just the financial investments, we got our '18 distribution here within the last month or so, so because of the time it takes '18 to go through Congress and make it through OSD, get approved and get the money out to us, that money started coming out here within the last month or so. There's money invested in '19 and we're really pleased that Congress is moving forward in what they call regular order to try to make this a year where they approve a budget and an NDAA and we have money on October 1st to go ahead and start moving out. Then we'll continue in '20.

The most significant thing that we've seen is the impact of adding additional end strength for the Air Force, and we targeted quite a bit of that early initial end strength gain into our aircraft maintenance career fields. So across the Air Force we're seeing units that had holes in them where we did not have maintainers. Those holes are being filled up. But they're being filled up by brand new people right out of tech school, what we call three levels that need time to train and experience and become five levels. And our definition of a five level is they can work on an airplane unsupervised and get the work done without somebody standing over their shoulder checking on them.

So we are seeing that our units are starting to be able to fly more, and fly better because of those people coming in.

We'll continue to work to train those folks, and part of what it takes to do that is to have time to train them. So we've advocated with the Department of Defense and with the Joint Staff to look at the deployment tempo of our units that are working as instructed to recover some full spectrum readiness or improve their full spectrum readiness to be able to fight in any scenario around the world instead of being tailored to the Middle East more permissive fight.

So that's about balancing the need to deploy with the need to have time to train, and then when they're at home we're working to balance the time that they're off doing exercises around the country and the time that they're home so that they can train three levels to five levels, which happens best at home station.

As we train those people, then we'll be able to fly more, which will drive a requirement for additional flying hour spending and additional depot spending to be able to keep up with the increased flying and we think we have a road map and a plan towards being able to do that, and we'll start to see some improvement in our units' readiness reporting this year because of those people primarily.

DWG: So really the effects have not taken place yet.

General Holmes: So I think the people effect is there and is having an effect. Then as the '18 dollars get spent and we get into the '19 budget then you'll see a continuing impact.

DWG: The cancellation of the South Korean exercises. Does that provide you with more resources to inject into the readiness accounts? Or is that strictly within PACAF?

General Holmes: That's a USFK-driven exercise. We've always supported their exercise with people to plus-up their staff and to support the people that are training. As far as the impact on our readiness that comes out of that, if it ends up resulting in more time at home to train three levels to five levels for ACC then it would have an impact on our readiness recovery as we go forward. But in general, they do that exercise with their in-place forces, but with some staff augmentation from the Guard and from the Reserve and from ACC. So there will be some benefit on people not deploying if they go to do that. Our job is to provide forces to the combatant commanders, and we'll provide as they ask us to.

DWG: Good morning, sir. I wanted to ask you kind of the context of survivability and high end/low end fight. Can you talk about where you see ISR assets going, [inaudible] for the MQ9 and [inaudible]? But the platform is getting [inaudible], and you guys have been looking at replacements, so can you just talk about where that's headed?

General Holmes: I like the way you called it, the strike ISR component. We call it persistent reconnaissance and strike, is how we think of the MQ9 as a multi-role airplane that can do strike missions and can also provide reconnaissance for the commanders.

We bought that airplane as primarily a permissive environment airplane and it continues to be really effective there and improvements in range, giving you more on-station time and additional sensors, all those things are great for the fights that we're taking.

As we look forward, the question will be is there a role for kind of a persistent attack and reconnaissance airplane in the more contested environments, and what would that look like. So we'll think through that. We'll decide where the boundaries are on where those airplanes can be effective and where they can't. And again, it's not a one or a zero. You can think about a world where you're able to create multiple dilemmas for an adversary by having persistent strike and reconnaissance out there on the edge that they have to think about, and then penetrating capabilities that they also have to think about, and how do they balance their force to take care of both. Those are the kind of things we're thinking about.

DWG: A few months about the multi-domain war games that you were starting. Can you give us an update on that and what you've learned from that so far?

General Holmes: We continue to execute those. We're doing a tabletop exercise this week with TRADOC and Air Combat Command. This one's focused on how do we make our command and control elements work together to execute multi-domain operation.

I think the main thing we're learning is we're coming to a common view that to succeed on the continental combined arms battlefields of the future it's going to take a strong partnership between the Army and the Air Force and the other joint forces to be able to bring everything together that we have acquired and figure out how to use it well together on the battlefield, to prevail. Then we'll work through some of the specific lessons about exactly what does that mean and how do we do it? But we see the benefits of being able to bring our various ISR tools together, of looking at the strengths and weaknesses of our command and control systems, looking at our various long-range fire systems and how do they work together. There's a real commitment I think between the leadership of the Air Force and the Army to work together to figure out how to solve those problems.

General Holmes: General, if Congress did not fund the JSTARS Recap, do you think that the [inaudible] work should continue? And if so, what kind of platform do you think [inaudible]?

General Holmes: As you look at advanced battle management, the idea would be you'll have multiple sensors in different environments, so multi-domain awareness we talk about. Do you get your awareness in a mix of orbital systems, air systems, cyber systems, publicly available information systems, and how do you pull that together in a way to get better information faster? So you're going to continue to need a variety of sensors. So it makes sense to continue your development of those various sensors and then decide what kind of platform you put them in and how you get them there.

Right now I think we're focused on the network part of that, and how do we build a network that can gather all that information, that can do the processing of it, to turn it back around quickly to decision-makers. So it makes sense to keep your R&D going on sensors so that as we work through that network then we'll have options on sensors and platforms, but for now I'd say we're more focused on thinking through the network problem and using the sensors and platforms that we have, and then we'll think in the future about how we tie other things together.

DWG: Good morning. On the [inaudible]. You're one of the most knowledgeable guys around about the F-35 capabilities. Would you be comfortable if the [inaudible] advanced radar operated by [inaudible]?

General Holmes: Ultimately it will be hard to avoid that in the long term. The question is when and how. So that's kind of a policy issue.

We take steps whenever we fly the airplane to do the gain and loss analysis of where do we want to fly it, what do we want to do, who do we want to fly it with, and we'll continue to work through those processes and make recommendations up the chain to policy.

But the airplane's out there. We've accepted 300 of them in our nation. We're going to station them overseas and we've already said we're going to Alaska next and to the United Kingdom after that. Our European partners are starting to receive the airplane. So the question I think is not so much about will you, it's about how will you do it in order to make the balance work between demonstrating commitment and assuring your allies and preserving your state secrets that go along with it. And we'll, we have procedures in places to do that and we'll continue to do it.

DWG: Are the Israelis share their lessons learned in their operations of the F-35?

General Holmes: My answer would be yes. I got a chance to go visit over there this spring and visited their operating base and talked to their operators. And I think they have a desire to share that information with us. I'm not going to talk about exactly what they're sharing with us, but yeah, we do have a continuing relationship with the Israeli Air Force and we do share information.

DWG: Anything surprising?

General Holmes: No. They operate it in some different ways than we do because of the size of their Air Force. They tend to do tests, training and ops all in one squadron because they only have one squadron, where we tend to fragment that out and have test squadrons and training squadrons and ops squadrons. And we can always learn some things from each other about how we do that.

DWG: I have a question about light attack as well. Over the past 12 weeks we've heard about how much these planes are flying, that they're being turned around several times a day, that they [inaudible], dropping weapons and really [inaudible]. I guess my question is, is there a chance [inaudible] went too fast? And I guess the flip side of that is also if the answer is no, are you worried that this has a chilling effect on future experiments?

General Holmes: I'll answer the second one first. I don't think it will have a chilling effect on future experiments. Whenever you're trying something new there are risks of trying something new and working through it, and without knowing exactly what happened and certainly without trying to insinuate exactly what happened, aviation's not necessarily risky, but it's unforgiving. And when you're going to learn new things you learn new things.

I think we'll take a look at the data we've gathered. We'll continue ahead with our process toward deciding whether we want to go forward with the program. And again, we mourn the loss of Lieutenant Short and we appreciate his commitment to trying to find out how to do this and we'll continue to work forward. I'm not concerned that the accident will have an undue effect on how we go forward.

DWG: When you guys do decide to go forward and flights start up again, is there, are you guys already talking about additional precautions that you could put in place? Additional maintenance factors, safety checks?

General Holmes: The way our process works is first we try to figure out what happened, and we haven't figured out what happened yet. And so because there's no operational mission here, we're able to take a pause and wait until we get at least the initial indications of what happened, and then our processes are when we know what happened we'll go ahead and act where we need to. Even if we have to do it before the final report comes out of the safety board and an accident board, and we'll take precautions at that time. Right now we don't know whether there's anything that needs to change or not.

DWG: I've got a question for you about the new wing structure experiment at Mountain Home. It was only announced about a month ago so I assume it's too soon to say what you've learned so far. If I'm wrong, feel free to correct me.

What I'm curious about, what are your hopes for this? What do you hope to learn and what problem, what issue do you want to solve?

General Holmes: A lot there too in answering that question but I'll walk you through the purpose of it.

The Air Force has gone back and forth between wing structure several times during the time that we've been an Air Force. And we've gone back and forth between structures that had groups and structures that didn't as we worked through it. And you can take a couple of things away from that.

One might be that we've never gotten it exactly right. And the other one might be that it might not matter too much because we continue to provide air power effectively.

So I don't think this is going to be earth shattering. But what we're trying to do is to prepare our squadrons which are the fighting unit of the Air Force to be able to be effective when they're at home and when they're deployed. To prepare for deployment in the same structure that they'll work in when they go forward. To recognize that we're living in a world where we may move squadrons around the globe without a large wing infrastructure behind them.

So for the last 15 years we've been deploying squadrons, but they largely deploy into infrastructure that's set and is enduring at enduring bases in the Middle East so they fall in on the wing structure kind of like they have at home. If in a future world we're going to disburse them and spread them around and they're going to move around from place to place to make it difficult to target them, then how do we prepare a squadron to be able to do that?

We think the way you do that is to give squadron commanders the tools and the resources they need to accomplish their mission, to set the standards you want them to accomplish, and then to turn them loose to go do that. And that takes some practice.

The folks at Mountain Home, it's too early to draw any conclusions from it, but I can tell you the folks at Mountain Home are fired up and are very enthusiastic about the experiment that they're doing, and they'll do great. Part of the reason we picked the wing at Mountain Home is that I'm not worried about them failing if we got some things in the experiment wrong. They'll work their way through it, they'll make changes as they go, and they'll continue to provide the combat power that we've asked them to do.

DWG: We've heard from some people who remember when this kind of structure [inaudible] experimented with before, who have some concerns, particularly if you take away the maintenance squadron, they say that you remove some of the career advancement opportunities for maintainers to go into squadron command. If maintainers, crew chiefs, avionics are with the fighter squadrons, there's some concern that that might dilute some of the special abilities. You've got a certain guy to do one thing, you know, on squadron, the other squadron doesn't have that.

Do you agree with some of those concerns? How are you hoping to get around that?

General Holmes: So I agree that those are things we have to be concerned about and we have to make sure that we answer. There's still two maintenance squadrons in the organizational structure, and there's still strong tough jobs for maintenance officers with the flight line maintenance that's aligned with the two fighter squadrons there.

We also have an A4 on a wing staff. We created a fairly robust A4 on the wing staff to bring some of the functions that were done previously at the group level and a previous structure in a maintenance operations squadron together under an A4 that will be a graduated maintenance squadron commander. So somebody that brings that experience that they gained commanding one of the other two maintenance squadrons together into that environment.

Then we're looking at how we'll make sure that we provide the O6 leadership and the chief master sergeant leadership based on the experience there.

We have a wing director of staff that will be an O6, and one of the options we're looking at is will we want to put a senior experienced maintainer into that wing director of staff

position so that we continue to have that experience there? And we'll work through some options and try it a couple of different ways as we do the experiment. But the tradeoff is, in the previous structure the aircraft maintenance squadron that owned the flight line maintainers was really big. The one at Seymour Johnson has almost a thousand airmen in it. The one at Mountain Home had about 700 airmen in it. That's a tough span of control for any one squadron commander to manage, and to know their people, and to look out for them, and to take care of squadron commander tasks and take care of maintenance focused tasks.

So there's always been a tradeoff there in the different structures. If you split them down into a smaller number, so we had fighter squadrons that had maybe 75 or 80 people in them and a maintenance squadron that had 700 people in it. So can you balance that so that you balance the span of control where a squadron commander can actually know their people and take care of them and be focused on the mission. So can you go from squadrons of 700 to squadrons of 300 and get that part right?

So we'll have a couple of years to work through it. I'm sure we'll make some changes as we go through. We've asked our Air Force Studies and Analysis Office to help us with developing metrics that we'll use to gather data, and then we will probably go to an outside consultant as well in the commercial world to let them help us decide how we should, what we should look at and how we should measure success. And we'll compare the wing at Mountain Home to the 4th Fighter Wing at Seymour Johnson which also flies the Strike Eagles, and they'll be the control. They'll stay in the previous structure. Mountain Home will try something new. We'll compare them to themselves over time because we're all going to get more ready, we're all going to get a little better here because of the money and the resources that are coming in and we'll compare the two wings to each other.

DWG: And as you compare, what will you be looking for?

General Holmes: So primarily we'll be looking at the readiness metrics that we already have across the wing. Not just flying. So down in their support squadrons and civil engineering squadrons across the wing. And we'll look at the retention aspects, which is a good way to measure how your airmen feel about the work that you're asking them to do and their environment that they're doing it in. And then we'll build a bunch of metrics below that.

We're not going to create any new ones. We already collect a whole lot of data, and it's deciding which ones are the right ones to look at.

DWG: General, if you talk to any Navy officer these days they'll tell you that they need 355 ships. Has the Air Force yet come up with a number for how many combat planes it needs?

General Holmes: My answer to that is we're working through that. So we have a new National Defense Strategy and the Air Force is working through the process of determining what Air Force is needed to meet that new National Defense Strategy, and how do you represent that to the world?

Certainly the Navy has been able to simplify that by saying you need 355 ships, but really, there's a whole lot more to it than that, right? They need air wings to go on ships, they need weapons, they need long range, the P8 community and the other things that are out there. So it's a simplification. And how do you, after you've worked through that math of what do you need, is there a way that you can represent that so that it's easy to understand and that it can have the same kind of simplified recognition that the Navy gets out of 355 ships.

So starting with the National Defense Strategy, deciding how much Air Force is required to do that and then decide how to present those forces to combatant commanders and how to represent what you need to the administration and to Congress. The Air Force is in the process of working through that.

DWG: When do you expect [inaudible]?

General Holmes: That will be done at the headquarters and we'll have to ask them.

DWG: How do you make it sellable? The Air Force has not really had a good track record with recommendations in the last decade or so. I'm thinking A-10. Or even JSTARS now. How do you make It sellable?

General Holmes: I think the way to do that is to try to tie your recommendations to the National Security Strategy and the National Defense Strategy, to try to put some analytic tools behind it so that you can show that link. And to be able to go forward and work through demonstrating that in the Department of Defense and to the administration and then go over to Congress with the backing of the administration and the Department of Defense because you have done what they asked you to do and you've shown what you need. And we'll work through that process.

DWG: Hi General, thanks for doing this. You mentioned earlier that there might be some benefit to your people getting to stay home, not go to Korea, do the training at home. I'm wondering about the flip side of that. If you're worried about any negative effects of them not getting that experience in Korea.

General Holmes: What we've talked about is one exercise that's not going to be held this summer. Over time we rotate units in what we call theater security packages, TSPs, where we rotate units through there. I don't know what the answer will be on whether we're going to continue to do that, but for now our units are adequately experienced in Korea and if called upon to go prevail in a conflict in Korea, we've done quite a bit of work and they're pretty well prepared.

Over time there are ways to train for that, and some portion of that is going to Korea. But you can also train against a representative threat that's built on the threat that's presented there. You train together in the team that you'd be expected to operate with.

So I'm not concerned that our national policy on going forward with negotiations with North Korea, which is great, and working through exactly the details of that, I'm not concerned that that right now is having any readiness impact on our ability to go operate there if we have to.

DWG: How many people do you typically send to the Freedom Guardian Exercise?

General Holmes: I don't know that I know exactly the answer, but primarily it's augmentation of headquarters staffs is primarily what we send forward, and it's a mix of people that come from Air Combat Command and from the Air Force Reserve and from the Air National Guard that are trained and ready to do this, and it would augment them if they had to in time of conflict, then they'd go forward and augment them and train together and work through it. They have a continuing habitual relationship and so the loss of one rep is not going to have a significant effect on their readiness.

DWG: I just wanted to be clear on one thing that you said on the first question there. If future exercises with South Korea are also canceled does that therefore mean that future TSPs to Korea might be canceled as well?

General Holmes: That's a decision that, that's a policy decision that somebody else will make.

DWG: Project Maven. We've heard [inaudible]. We've heard virtually nothing about what [benefits] is actually [inaudible]. Can you give us a sense of how much [inaudible] first year, and what uses you can see, expanded uses for ACC [inaudible]?

General Holmes: The basic idea of Project Maven is can you use learning algorithms so that machines can learn to do the things that people are doing. So Project Maven we started with all the full motion video that's being captured around the world all the time. So much of it that there aren't enough people to go look at it, is can you have machines go look at it and then alert a person that hey, you need to come look at this piece of film right here. At 12:07 there's something you want to see.

The way we've been doing that is kind of the same way, you know, I watch three-year-olds learn things on their iPads. Pick all the green things. Is that green? No. Is that green? Yes. So you do the same thing with a machine. So we've had young airmen that are working through teaching the machine, and the machine is starting to learn how to recognize things. The benefit of this will be it will free up people to focus on thinking about what they see and what it means in the intelligence field and on passing that information to decision-makers more timely because you're able to do it

faster. And yeah, that's a big part of our future and you'll continue to see that expanded with Project Maven being one of the first steps and bringing learning machines and algorithms in to be able to allow people to focus on things that people do best and let the machine do that repetitive task.

DWG: Any examples on how [inaudible] over there in the last [inaudible]?

General Holmes: I wouldn't tie just Project Maven separately, but I will tell you that the efforts that we've been doing in his Air Operation Center Pathfinder efforts on how to bring coders and operators together into what the industry would call a DevOps framework is providing him new tools that work faster and better than the old ones and are able to streamline his processes and allow him to do it with fewer people. So we are seeing some payoff in that with Project Maven being one part of that.

DWG: Can you give us a little S400 101? Why is it such a concern versus the S300? [Inaudible] on the S300. Can you -- we decoupled from Turkey. Why is it such a concern?

General Holmes: So constantly evolving defensive systems, constantly evolving offensive systems. The big things that we see are increasing range and an increasing sensitivity of the sensors that are deployed with the evolving surface to air defenses.

Part of the main issue here is the increasing range of the new systems that are being deployed. So it limits the range particularly of your legacy aircraft, of how close they can get to targets until you're able to go counter these. We continue to work to use all our tools to make sure that we have a way to counter them. And we do, but it requires pulling together a lot of tools together to operate in an integrated way to go do it.

So the concern is it pushes you back like we talked about, beginning with the E8. That means you have to work from further away. It means you have to go further off the tankers so you have less time when you're forward. So part of the emphasis of our multi-domain operations that we're doing with the Army is trying to find ways that we can defeat these systems together so that we can get in there faster and be more effective sooner.

So it's a constant game between people that are very good technologists on both sides trying to get an advantage, and we'll continue to work to find tactics to counter what they do. They'll come up with a new tactic to counter what we're doing, and we'll continue to be ready to fight if we have to fight on the base of those systems.

DWG: Is it [inaudible] over the S300 or incremental?

General Holmes: It's incremental.

DWG: If I could follow up on the Project Maven question, are you at all concerned with all the backlash from Google that you'll have trouble, there will be others in Silicon Valley that will work with the military? Or are you confident that there will still be companies that will work with, for the same mission?

General Holmes: So am I concerned? Yes. But look, this is part of being an American, is that Americans have expectations about how their, what their government does and whether the government uses technology and tools to infringe upon their rights or not. So we have really high standards as a nation that the things that we bring forward as military tools have to live up to. So that reflects in things like our separation between Title 10 and Title 32 status and passe comitatus and all the things that limit Military use in civilian applications or in domestic applications. And as we go forward, the place where R&D money is being spent in the United States is primarily in the civilian business structure. So for the military to be able to move forward into the future, we need to take advantage of where that R&D money is being spent and where the advances are in technology. If you look at where the money is in our current business structure there's a lot more money in the tech side than there is in the classic defense industrial complex.

So the groundbreaking research going forward is in those tools in the business market. If we're going to be effective in this battle of technology with adversaries we hope to be able to take advantage of that.

So we're going to have to work through as Americans our comfort level on how technologies are used and how they're applied. I understand the views of the people there. It goes into being a member of the military is, you know, I wield some pretty impressive technologies and our job is to make sure that we use them for good in accordance with the rules that are laid out in the constitution.

These are also impressive capabilities and we will do the same thing. We'll make sure that we use them for good in accordance with our constitution and what it requires us to do.

I'd make the case that our job is to compete with these world-class peer competitors that we have and by competing and by setting this competition on terms that we can compete without going to conflict, it's better for everybody. And so you have to weigh this are we able to field tools that allows us to keep this competition at a level that's below armed conflict by understanding, by deterring each other, by having capabilities that enemies know if they fight they can't win, and can we find a way to avoid returning to an era of wholesale bloodshed of conflict between great powers that we've been able to avoid. So there's a role for our technologists to help us do that.

What I'd like to do is be able to convince people that we're all in the business of avoiding major war. That's what we're trying to do. And we're going to have to rely on our

industrial capabilities that are on that business and AI side if we're going to do that, so how can we work together to set a rule set so we can go forward?

DWG: Are you confident that we will be able to convince Silicon Valley to work with you? And how are you doing that?

General Holmes: I'm confident that we'll have access to good talent and to people that have a strong desire to help defend the United States. We have them that work in our cyber forces, that work in Silicon Valley and then work in a Reserve uniform a certain number of days a week, or in the Air National Guard to bring the capabilities they've learned in business to bear on behalf of their country.

Part of our job will be to make sure that we continue to offer ways for people that are inclined to do that to come do that for us. But yes, we'll find a way to do that.

DWG: Scott then we'll open things up to round two after that.

DWG: You inherited the cyber responsibilities of the Air Force. Can you maybe take us through how you've kind of brought that into your command and then some of the challenges you've had?

General Holmes: I can, and thanks for the question.

Right now we plan on bringing our cyber Air Force, 24th Air Force into Air Combat Command next month, in July. For about a year we've been working to prepare Air Combat Command Headquarters for taking on that responsibility. So we did a mission analysis of our staff and we had a long discussion and effort about how should we change our staff, and we built a plan to do that and adding people into our 2 which is intelligence, surveillance and reconnaissance, into our 3 where our operations are done, and into our 6 where traditionally we've done our network ops and cyber. We've added some people there to be prepared to figure out how we will use cyber to do all three of those things and how we'll integrate it into what we're doing.

We're working through the transfer or some of the billets from Colorado Springs to Langley, and for the short term we'll have an operating location there in Colorado Springs so that people don't have to pick up and move right away and their families, particularly on the civilian job side. We'll keep the stability there. And we'll be prepared to bring 24th Air Force over into Air Combat Command next month.

The next step then will be looking at how 24th fits into our Air Combat Command enterprise and are there changes that we need to make to look at resources. But 24th and 25th, which is our ISR Air Force particularly. And then across the rest of our numbered Air Force structure.

What should we do to prepare Air Combat Command as a 21st century combat integration command for the Air Force that brings conventional kinetic forces, our ISR tools, our command and control capabilities, our personnel recovery capabilities, and now our cyber capabilities, to integrate those together and present them to joint warfighters in a way that makes them [more fit].

DWG: What are you adding by having the cyber [inaudible]? What is it doing within Air Combat Command that it wasn't doing in where it was before?

General Holmes: We think it will give us an opportunity to think through ways to be able to integrate our traditional operations with cyber operations. How can se use one to the benefit of the other and how can we make the whole be worth more than the sum of the parts through coordinated operations. So we've done some work to do that. We'll continue to think through that. But the basic idea is that we're a command that integrates the Air Force's capabilities together in ways that make them more effective. That's the job of our Air Force Warfare Center out at Nellis. It takes advance training, advance tactical development, and tests of our systems together, so how will we bring now those tools that we've always been able to do that, and bring cyber into that mix. Taking advantage of the ways we think about warfighting with the tools that are provided by cyber to make our warfighting capability better.

DWG: Can you clarify something? So is 24th moving under ACC instead of a 24th/25th merger? Or is that a first step to --

General Holmes: We think it's the first step. So the first step is bring 24th Air Force over into Air Combat Command, and then we're already conducting a mission analysis of how the two should be put together. And if you put the two together, should everything be there? Or should some parts of it go to other places in Air Combat Command? We're going to take some time. We're going to try to work through that. My joke is we want to see where people walk across the grass between the two before we pour the concrete for the sidewalks, instead of doing it the other way around and having to go back and change things.

DWG: A coup-le of things on F-35. [Inaudible] mission yet? Are they equipped to handle the S400?

General Holmes: I'm not going to talk specifically about the mission data files on the F-35 except to say that we build the mission data files that are optimized for different areas where the airplane would operate, and we're doing that. I'm not going to talk about what's in and what's not in.

DWG: Parts availability has been an issue for the last two or three years. What is your current candid assessment of the trend of parts availability and improvements that Lockheed has been making in terms of delivery? What are some of the message you're getting now?

General Holmes: Thanks. I'd start with saying the airplanes that are coming off the line in Fort Worth now are really good airplanes. The guys that are accepting them at Hill and other places are very happy with them. They're happy with the way that the fusion that we paid for on the airplane works. They're happy with the reliability of the systems booting up and down together. They're happy with the way they've worked when they've deployed places on the short deployments they've made. The air vehicles coming off the line continue to have some issues. We recently worked through a corrosion issue as Lockheed Martin figures out how to build these airplanes at scale, right? They're now building them at scale and not building just a couple a year. So they'll work through that part of it and the airplane is performing very well.

We think about eight elements that go with it, and there are still some problems that we're working through with Lockheed on developing all the elements that go with it on the time frame that we'd like to see to keep up with the air vehicle. So we'll continue to focus on the sustainment of the airplane, how parts are acquired, how they're distributed on Alice, the system that communicates between the airplane and all the other systems on the mission planning system, on making sure that all the pieces that it takes to have an effective weapon system, the support equipment and everything else are delivered at the same time. It's a giant enterprise spread across a whole lot of countries. It's one of the more challenging tasks any defense contractor's ever taken on. And they're learning their way through it and we'll continue to advocate for the parts of it that we need.

But the air vehicle itself is working well. And then our focus right now in the department, and we're getting great support from the Deputy Secretary and from the agencies in the department, is focusing on helping Lockheed Martin and their partners find ways to make sure that we drive sustainment costs down, so we can afford to fly the airplane at the rate we need to have competent crews and that we have parts available and that we're able to maintain the availability.

DWG: Are you hearing complaints? Or not chronic complaints about aircraft being down waiting for parts [on the line]?

General Holmes: We continue to have problems getting all the parts that we'd like to get out of the system. I think it's not unusual for a new airplane. And again, as we start to scale up production. But the newer airplanes work better and have fewer problems and have a higher availability rate than the early versions do.

DWG: What's the problem with getting the parts? Is it just they won't build them? Are they under warranty and they're just not fulfilling those warranties?

General Holmes: For the specific details of that I'll refer you to Air Force Materiel Command. But I think the primary issue is, again, we're scaling up and delivering an airplane and you can predict what the break rate will be on parts and how many parts

that you'll need. But that prediction and getting it right takes you a few years to work through.

So one of the other analytical tools the department is working through is how can we use things that the airlines have been using now for a while in predictive maintenance? But you have to have a track record to base that on, of when parts fail and when you have to replace them. And the airplane's pretty new, so we're still working through that track record.

The airlines have been really successful at reducing their flights they lose for maintenance from 50 or 60 a month down to 1 or 2 a month and we're working at applying those same tools to the airplanes that already gather a lot of data, and the F-35 is one of those airplanes that already gathers a whole lot of data. So what can you do to predict so that you can make parts in advance so that you're not waiting and going to ask somebody to make one when you need it.

DWG: Is Alice doing what it's supposed to do?

General Holmes: Alice is designed to communicate between the airplane and the folks that would do that ordering and work. Again, we're scaling up with a new airplane to be able to handle that.

DWG: So there aren't any industrial based weaknesses that you're seeing?

General Holmes: Across our enterprise, our enterprise tends to operate at maximum efficiency, Collin, right? So it tends to operate in the business world, to have only the infrastructure required to produce the capability that you're going to get paid to produce. So I think we should expect to have to walk that line a little bit.

We don't have a problem with having people that will build the parts. The problem is are they scaled up to produce them on the numbers that we'll need, and that's part of this scaling up process. We need more parts because we're building more airplanes, and we need more parts because we're flying more airplanes, and it's going to take a while for it to catch up.

DWG: You said you were working with the Army on dealing with S400. What can the Army do? Are you talking about long range fires or hypersonic missiles or, what can they do?

General Holmes: WE have capabilities that we'll bring together in ISR and being able to command and control things and in the different long rang fires that we bring to the fight. And I'm not going to talk much more beyond that.

DWG: Separately, there's a lot of road maps coming due or finished. I wonder if you can walk us through a few of those and not necessarily what they say, but what's the

process? What happens now? And what comes out the other end in five, ten, fifteen years from now?

General Holmes: With the new National Defense Strategy and as we review what the Air Force should provide there, the Air Force is also standing up a new way to go about answering those questions through the AFWIC, the Air Force Warfighting Integration Capability. And we're bringing some of the things that were traditionally done at the MAJCOM level up to do them together in one place so that we can make sure they all fit together.

So in a multi-domain world for all your capabilities are integrated and have to work together all the time, did it make sense to keep building the pieces separately out in our MAJCOMs and put them together? And we're moving toward an ability to do that more centrally.

They have the task from the Secretary and the Chief to take a look out there at about 2030, and with the new National Defense Strategy, and decide how an Air Force should fight, what capabilities will they need to do that, what ConOps will they need to do that, and then how does that work back into what we should be pursuing as part of the effort that we talked about to decide what Air Force should we have.

So I think all those different things that were done in various road maps, all that work was done and it's being fed into that group, and now they'll work through that larger question of what should the Air Force look like in 2030, how much Air Force should we have in those different capabilities, and then take the research that was done in the MAJCOMs and in the functional areas and pull that together and then come back out with an answer that, you know, should be closer to the 355 ship Navy kind of answer, of pulling it all together.

DWG: And will you have an answer in time for the '20 POM or is it going to take longer than that?

General Holmes: I think we'll have part of the answer for the '20 POM and we'll continue to work on it. But that's a question probably for General Harris and the 5-8 to answer exactly on that timing.

DWG: What has the Air Force specifically learned from the ISIS fight in Iraq and Syria that you're going to take over into multi-domain?

General Holmes: We have made progress I think at employing some of the things that we talked about and improvements in our ISR capability and in employing the new tools we've developed as part of this DevOps approach to our command and control, to finding ways to use publicly available information alongside the exquisite information that we historically have relied on from our national technical means. Part of what we're learning is that that's a rich source of information in a world where you're fighting a

disbursed enemy that is out among the population, is that publicly available information is going to be as important as the kind of exquisite national technical means have been used to gather information.

So that's one of the things that we've learned. I think another thing that we've learned is this complexity of having to fight that fight and share the air space with other great powers that are also working in there to pursue their own goals. And the complexity of that and what tools will be needed to do that.

As you guys know, we'll have airplanes flying over a friendly ground force in the vicinity with RPAs flown by Syria, but also flown by Iran and maybe flown by Russia. There are Russian airplanes airborne. There are Syrian airplanes airborne. There are American airplanes airborne. Other coalition forces airborne. Just the complexity of this I think cries out for some of the things that we talked about about using artificial intelligence and learning machines to try to help you sort through all this data and be able to give everybody a picture of what's happening and the complexity of that.

So the main thing I think, I have to go back to that first answer, is our traditional reliance on just things that we've gathered through our intelligence apparatus. We're learning that there are other very useful sources out there in publicly available information.

DWG: You talked about Project Maven and Pathfinder. Now as a layman, how would you talk to someone who was brought up on Hollywood movies, who would see this as the first step at creating a [Sension E] that can kill without remorse?

General Holmes: SkyNet.

DWG: SkyNet. Is this the first step to SkyNet?

General Holmes: I certainly hope not. If you look at the things that have been done and so you're talking to a fighter pilot with an electrical engineering degree masquerading as an artificial intelligence scientist here, but my understanding is that although we built learning machines that can beat an expert at games like Go or chess or do those things, we find that one of those machines paired with a human is still more effective than the machine by itself.

So a machine, a learning machine providing options to an experienced human is still more effective than a learning machine on its own.

I thin this is part of what I talked about with Laura is this unique responsibility for Americans to think through how do we build systems that can deter war between great powers, or win a short, sharp conflict and push it back down into competition, and still do that in keeping with our unique values and our constitution and our approach to

using violence on the service of the state, and these are all complex issues that we'll have to work through. But I'm not worried yet about AOC Pathfinder taking over as SkyNet.

DWG: Kind of a small follow-up on [inaudible]. So have you gotten any indications that whatever happened in the crash is an issue that you can see across the rest of the A-29 fleet? I mean why would this one instance be something that could [inaudible]?

General Holmes: It's way premature to talk about exactly what happened through there, and I'm not concerned right now that anything that happened is going to be something that's going to derail the whole process. It's a learning process. Unfortunately some of that learning happens the hard way. We don't know yet exactly what happened, but I'm not concerned that this one incident will derail the process.

DWG: So you don't see this as reflecting on all the other A-29 --

General Holmes: I don't have any reason to right now.

DWG: My other question, now that BACN is a real program of record, can you talk about where you see that program going and how you envision using that asset outside of just CENTCOM and what that would do for your [inaudible]?

General Holmes: The long-range issue here I think is everything that we're doing you can talk about in different ways. People talk about it as a sensing net and a command and control net or a fires net. WE may talk about it as multi-domain awareness, advanced battle management and the coms that link all that together. Global Hawk Block 40, BACN and the other platforms that fly the BACN, it's not Block 40. It's Global Hawk Block 20 I think that's flying the BACN. Sorry. Don't hold me, don't make fun of me, don't judge me on not knowing which one.

But we fly BACN on both manned airplanes and on the Global Hawk. That's part of the agile, resilient com piece of how will we link the sensors together with shooters as we go forward into the future. Right now we're doing that with a gateway like BACN that ties one network to another network and allows them to share information.

We need to get to a point where among the services our networks talk to each other without having a BACN that has to interpret in between them. So we're not there yet, so we need that gateway, so we're going to fund it and treat it as a program and make sure that it's there for the warfighter. But what we're trying to do with ABMS, with the coms part that supports that, is move to a network that we can share information among all the relevant partners, that we can do it at multiple classification levels where you only get the information you're cleared to, and that we can have a common view of the battle space without having to buy a whole bunch of interpreters between those systems.

DWG: So where do you see the greatest demand for an asset like BACN?

General Holmes: Right now it's where the, where bullets are being fired and where the conflict really is, and it's tying together all those different systems where they're doing it in the CENTCOM AOR.

If you look at the vast distances that are in a Pacific scenario or in the other things that we're talking about, you're limited by line of sight and so is BACN the right approach to that in some small part of the battlefield? Again, that's why I think you want to get to a more holistic solution that lets everybody talk to each other wherever they are instead of having to link them together on the site with BACN.

DWG: General Holmes, we are out of time, but I want to say thank you for coming in to meet with us and for your insights.

General Holmes: It's always a pleasure to see you guys. I appreciate your role in the process and I enjoy visiting with you and having a chance to talk. Come see us at Air Combat Command sometime, and I look forward to seeing you again in other places. Thank you.

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