2015 Air and Space Conference

Keynote Address By General Hawk Carlisle
'Fifth Generation Warfare'

15 September 2015

MR. VAN CLEEF: Air Combat Command provides conventional and information warfare forces to all unified commands. You'll have his bio in your program. I'm very pleased to have him with us again this year. I'll now turn the podium over to General Hawk Carlisle.

GENERAL CARLISLE: Thanks, Scott. I really appreciate it. Thank you very much folks. If you'd go ahead and run the video. In keeping up with the Robinson's I have to have a video as well. [Video]

Thanks, ladies and gentleman. Thanks for being here this morning. It's truly an honor to be here. I show that video because I think it provides great context. It shows our origins, from the Army Air Corp days to where we are today as the greatest Air Force on the planet. The other thing it does, it gives us a chance to recognize those that have gone

before us. We stand on the shoulders of giants, as Vince said earlier this week, and it's those folks that put us here to make us the Air Force that we are today.

So before I get in the stern of that, that goes to the past and present. I'm really wanting to talk today about the future and where we're headed. Before I get into that I would like to welcome everybody here. General Grass, it's great to have you here, sir. Thanks for being part of it. Secretary Wynne, it's good to see you again, sir. Thanks for being here. General Robinson, [Dave Rub] thanks for being part of this. I appreciate it. For everyone here, I really appreciate the opportunity to speak to you for a little while this morning. Hopefully I'll get through these slides. It's only about 180 or so, just kidding, and then maybe take some questions at the end.

So the title is Fifth Generation, and the reason I started with that title was it's not necessarily an airframe or anything. It's really

about technology and I thought where we're headed. It's how we move our Air Force to continue to be the best Air Force on the planet and what it takes to get there, so that's really what I am going to talk about today as I go through this. You certainly start with this incredible platform and what it does for our Air Force today.

The first F-35s have rolled out at Hill Air Force Base in Utah, as you're well aware of. If you look at what the F-22, the picture I just had up on the slide, and what it's doing against the fight in ISIS it is absolutely incredible. I'd venture to say it does more than was even thought it could do. It produces greater capability and when put it in the hands of our airmen it does fantastic things. It's an aerial quarterback. The situational awareness that the F-22 provides to that guy inside that cockpit or that girl in that cockpit, and then what they're able to do with that to make every single airplane in the air space on the coalition side that much better is simply amazing in what that airplane does. It's

[stel] super cruise, maneuverability, and then that central situational awareness it provides that pilot.

Same thing with the F-35. It is the most powerful, comprehensive, integrated, sensor sweet we have ever developed. You combine that with incredible electronic warfare capability in both electronic countermeasures and electronic counter countermeasures, you put it on a multi-discipline airplane it can do multi roles, and you remove the need for mission specific airplanes, and you really have an airplane, along with the F-22, that, again, in the hands of our airman will change the way we do warfare. It really is about getting to that next generation and where we go from here.

I think most important though is it's not just about platforms. These airplanes don't operate in a bubble. It takes our incredible airman and the way they use these airplanes, and they use all the equipment whether it's RPAs, DCGS, our satellite systems, the new fifth generation airplanes. What's going to come next in six generation airplanes? But

it's the way we think. We are a service that was born out of technology. Airman, by nature, are innovators. It's the way we think. We think different than other people and it allows us to take advantage of capability at a level that nobody else can do.

We need capital, innovation from industry, from small business, from our labs, from our academy, from AU, from all those folks that are out there thinking about technology and where we go, and how we get to that next level. We need the best technology on the planet, and I know that the United States is the place that that will be produced. We also need innovation from big A, airman, and how they take that technology and capitalize that, and make that the best it can possibly be and continue our Air Force to be the best Air Force on the planet for decades to come. It's really all about our airman and how we get there.

If you'll indulge me for just a few minutes, I love history and I'm a firm believer in those that don't learn from history are destined to repeat it. I'm going to go through a couple of vignettes to get

us to the thought that I'm thinking about today. It starts with the advent of air power in 1783, the Montgolfier brothers developed a hot air balloon and they flew it in 1783. There were journalists there at the time, and almost instantly they started talking about how you would use hot air balloons in reconnaissance for military operations.

Then in 1794 General Jean-Baptiste Jourdan in the Battle of Fleurus used the balloon to help his French forces overcome the Austrian forces. They had two folks in a balloon for over nine hours, and it really did help secure the victory. Then along came Napoleon. Napoleon wasn't dazzled by this so new technology. He didn't like it, so he shut down the French balloon school, and he said, I'll rely on the cavalry to do my reconnaissance. Can you imagine any modern day commander turning down the opportunity for overhead surveillance? That would never happen. It's not thought of. But Napoleon did that because he was short-sighted, and he didn't understand what technology was going to do for him. In fact, the

balloon did not reemerge until our very own Civil War almost 60 years later.

Of course, Tank Doctrine is great, not necessarily air power, but it is illustrative of lessons learned. So both the French and the Germans suffered horrific casualty rates from trench warfare in World War I. At the end of that war they both had access to the tank in small numbers, the very end of the war. They both had access to the same technology, but what they did with that technology was totally different. The French looked at it and said, yeah, we don't really think there's any place for the tank. We're going to work on bigger and better fortifications. They were thinking World War I thoughts, and they were going to build the imaginal line and bigger and better fortifications. The Germans, on the other head, said hey, you know what? Before you armor this thing up we can potentially take this and get movement back onto a stagnant battlefield. Of course, the results are Blitzkrieg and what happened to the French at the beginning

stages of World War II.

I think the other part of this is that we have to be cognizant of is, you know, obviously, we love technology and we're all about technology, but the technologically superior force does not always win the war. This is a case of the famed Russian Night Witches. They were an all-female bomber squadron in Russia in World War II. They flew biplanes that were made out of cloth and wood, and they flew them against MA-109s and Focke-Wulf 190s. Before the end of the war the Night Witches dropped over 23,000 tons on German positions and devastating effects on the German lines. But they did it with ingenuity, and tactics, techniques, and procedure. They'd fly at night, only at night. They wouldn't fly in the daytime. On their bombing runs they'd shut off their engines so they could coast in unheard. Incredibly successful.

Another part of it is innovation and time. Obviously, that's Colonel John Boyd. Then Captain John Boyd flew F-86s in Korea. The F-86 has, obviously, had an astounding success rate against what

was a superior airplane, the MIG-15. John Boyd was trying to figure out how come the Americans had this great kill ratio against an airplane that should have been better. He attributed it to decisions and our ability to react faster than the other guy. That's where we got his OODA, observe, orient, decide, act is where that came from in Korea. Today, the F-15 and F-16 are largely a result of the thoughts that John Boyd has a result of the Korean War. The airplanes and the success we've had today with those two incredible airplanes largely to do with John Boyd.

History lesson's over. We'll get college credit later. What we do in the CAF, the Combat Air Force is we're responsible for five core functions in the Air Force along with my good friend Lori Robinson, General Lori Robinson and General Frank Gorenc, General Robin Rand, and General [Brad Hydehold] we are 'the Combat Air Forces,' and we're responsible for these five core functions. So what I'd like to do is talk about these a few minutes. I'll highlight some incredible airman, but I'd also like to talk about

what we're thinking about and where we're headed in these five core functions. So air superiority, global precision attack, global integrated intelligence surveillance and reconnaissance, command and control, and personnel recovery.

History's not quite over. We have not lost anybody to an aerial attack from an enemy since April 15th, 1953. These are the last two folks we lost, PFC Herbert Tucker and Corporal William Walsh. Sixty plus years of air superiority. It's pretty incredible when you think about it. We've had that because our Air Force is that good. Like our Vice Chief says, General Dave Goldfein, he talks about it, everybody has come to expect that like turning on a light switch. It's not just air security. It's across everything we do. It's space. It's mobility. It's strike. It's ISR. It's command and control. Everybody believes that you just turn on the switch and the Air Force makes it happen, but that's not the case. We have to work at it. Our adversaries, we'll talk about in a second, they're getting better and they're going to try to

stop us.

It's like saying that I know I'm going to pass the PT test even if I don't go to the gym and workout because I've always passed the PT test. Well, that's not the case. That's hubris. We have to work to maintain the advantage that we have across our Air Force capabilities, and certainly in air superiority. Because the foundation of the joint fight is you've got to have air superiority. If you don't understand that high ground, if you don't have that you're not going to win that fight. You're going to put too many people in peril. You're going to lose too many lives. You're going to lose too much equipment. You're going to lose too many supplies, so you have to have that capability.

Our adversaries, as you've heard the Chief and Secretary James talk about, they are getting better. They're getting better at a phenomenal rate. That's a Russia PAK FA. The Chinese J-20. They're doing RPAs. They're in the cyber realm like we'll talk about, and I'll get into that a little bit later,

but they are getting better at a rapid pace. Our technological advantage is shrinking.

I got the good fortune to travel with General Welsh to China a little while ago and we were talking to the chief of the PLA Air Force, General Ma, and he looked at General Welsh and he said, we watch the Americans and the coalition in Dessert Storm and air war over Serbia, and Enduring Freedom and Iraqi Freedom and we, the PLA Air Force, said we have to change. If we don't change we can't keep pace with them, and they are changing. As are the Russians and as is everyone else. Our adversaries are getting better and we can't stand still. We can't rest on laurels. We can't say technology will win the whole war. We've got to do it all. It's going to take the way we think in the future to continue to be the best Air Force this world's ever seen.

We'll start with a couple of things, one is some of our deployment concepts and how we get there. Now, there's some great examples what the B-1 and B-2 did during Operation Odyssey Dawn in Libya was

absolutely phenomenal. What the B-2 did in Full Eagle in Korea right after the North Koreans set off the nuke test was, again, 38 and a half hour mission. Just an incredible capability. We're taking that to every platform and everything we do. That picture right there is a picture of an F-22 just having taken off from Amari Air Base in Estonia. That picture was taken about ten days ago.

But our ability to get places rapidly with our incredible mobility Air Force is the C-17's just a phenomenal platform in what it does. KC-46 is only going to add to that capability. The concept of rapid raptor was developed in the third wing in PACAF because you had F-22s and C-17s in the same wing, and they came together and came up with a great concept. It's incredible. What does rapid next look like? We're also developing a rapid personnel recovery, roll on, roll off capability. We're going to exercise that here in a couple months in an overseas location.

But think about it, when United States air power shows up in places and at times people don't

expect that's an incredible capability. It assures our allies, and it sends a message to adversaries of what we can do. We've developing this and it's getting better all the time. I also believe that when we get this right we will truly be able to give more capability to combatant commanders with the amount of capacity we have. It's developing at a rapid pace. Again, incredible successful. That first picture was Lask Air Base in Poland. So when you think about what this deployment just did it was a lot in the news, but it really truly was an example of how we can get places rapidly and do things.

The other is directed energy weapons. Everybody thinks, you know, you have a tendency to talk about high power microwaves and lasers and it's kind of science fiction, and, you know, you put little lightning bolts on the slide, but nobody really understands what the lightning bolt actually does. This is a reality. I will tell you that General Brad Heithold at AFSOC is really working hard to make this picture a fielded capability very soon. I believe

that we will have a directed energy capability and a pod that can be mounted in a fighter aircraft very soon as well. When you think about that that will change the game.

Imagine your ability to defeat an enemy surface to air capability with a directed energy weapon, so you can penetrate an anti-access area denial environment. Or what [Bill Eder] is doing as part of NORAD NORTHCOM. What happens if you developed a directed energy capability to defend your own air space to keep adversary airplanes from entering. Directed energy weapons is an area we're headed towards, and we're going there at a fairly good pace. I actually think it's a lot closer than a lot of people think it is.

Global precision attack is about our ability to hold anything that an adversary holds dear at risk. The way we do that is amazing. If you look at what our airman, our aircrew, and our battlefield our airman are doing in the fight against ISIS today it is simple amazing. The precision and the discipline

which with their executing those missions is historic in what they're able to do. Lowest civilian casualty rates ever with the greatest precision we've ever seen. It's simple amazing. And it's, again, it's all about those capabilities, that technology, and then when you put it in the hands of airman what they're able to do with it.

This picture was taken about a week ago. That young lady there is Lieutenant [Kaitlyn Via]. She's a 13 Lima. She's a qualified TACP. She's simply amazing. She'd just gotten back from Operation Inherent Resolve the night before and she did -- if you talk to the folks over there and what she was able to do down range, she truly is an amazing airman. A hundred thousand pounds of weapons were dropped with her as a key player. She developed the battle space and the airspace plan for the whole area, and she just did phenomenal work. She's just a fantastic airman. She's also very humble. She really didn't want her picture in this briefing, as a matter of fact. She'll tell you TACPs, it's all about the team. She'll point

to every one of those folks in the background that you see there and she'll say, they're the reason we're successful, these incredible folks behind me. But I outrank her, so her picture's in the slide deck. There you have it. But a fantastic airman.

What are we doing? We are doing everything in our power to make her job easier, and to make those soldiers that we're taking care of on the ground safer. We're developing cockpit selectable weapons. That's a new term that we use for things like this, small diameter bomb 2. The one that the Secretary mentioned the other day, the advanced precision kill weapon system. All those capabilities where we can change the yield and we can increase the magazine depth on the airplanes. Instead of putting one bomb per pylon we'll put four to seven bombs per pylon. It's an amazing capability and we're even going further than that. AFRL's looking at some ability to do a selectable fuse in flight, so you can change the frag pattern as you get to a CAS environment, so you know what to use based on the environment you're

getting into.

The discussion has to be about that. We've got to talk about how to do CAS better. The discussion of what platform is going to replace the A-10 to do CAS is ludicrous. We have to talk about how we do it better, and we do it better with technology, and putting that technology in the hands of our airman to make us even better at what we do. That's what we've done for the 68 years, the history of the United States Air Force, and that's what we need to do know. How do we get to those things? How do we get to dial a yield? How do we get to unlimited magazine depth? How do we fuse the sensor suite on the aircraft when it checks in with the JTAC so that you eliminate friendly fire in the future? There's ways to do that, and that's what we're talking about when we talk about global precision attack and how we make Lieutenant Via that much better at her job.

The other thing about global precision attack, it is not just foreheads on foreheads. If you look at our cyber capabilities and electronic warfare

it changes the game as well. A famous warrior philosopher once said the supreme art of war is to subdue the enemy without fighting. If we could use cyber capabilities to deny adversary airplanes the ability to takeoff that would change the fight. If we could use electronic warfare to the point that every radar screen in the integrated air defense system has 1,000 targets on it, and they can't figure out which the actual targets are that would change the game. Those are things we can do. It's amazing. We have examples. We do it all the time, but we're not doing it as much as we need to.

There's examples like the 707 Communication Squad and Red Team discovered an adversary malware trying to enter their network. So they found it, detected it, it never got in. They took it apart. They figured out the techniques that the adversaries were using to put it in there. They made their system stronger to prevent everything from penetrating or more things penetrating their network in the future, and then they took all this knowledge and they handed

it over to the rest of the government and made all the government networks more difficult to introduce malware to. It's a phenomenal success story.

This past summer, for the first time, we included cyber operations as part of Red Flag. We had Cyber Flag before, but we never actually included it. We talked multi-domain ops, that's another domain. We declared cyber the fifth domain back in 2005, and it took us ten years to get it into Red Flag. That's way too long. We've got to move faster than that. We cannot stop thinking about cyber -- or not do what we as airman do in every domain that we have a footprint in, including cyber, because it's hard, because we can't understand the authorities, or because we're afraid we're going to offend people. We just cannot do that. We have got to take advantage of this war fighting domain and do what we need to do it. Our adversaries, if you look at Russia and China and Iran and North Korea, and even ISIS they have a huge presence in the cyber domain. We have got to root them out in that domain and win in that domain just

like we're rooting out ISIS in the physical domain. Cyber is part of that. Electronic is part of that.

I will tell you, when it comes to realistic training, I mentioned Red Flag, this last Red Flag I was at, folks, this isn't your dad's Red Flag. The space play, the cyber play, the entire Red Flag it's just really strong. We're not there yet, but we're getting a lot closer in how we train and how we do things. Cyber is a huge part of that and we can't stop thinking about it. We can't not do it because it's difficult.

The other part that we -- you know, you always hear questions about is how flexible the inherent attributes of air power: speed, range, and flexibility in what we do. There's often a discussion, for one thing, about the 72 hour ATO cycle. Well, let's put that to rest. Seventy two hour ATO cycle is deliberate planning. It's no different than doing an [O plan] or [Tip Fit]. But the execution of theater air power happens in seconds and minutes. It's incredible what we do with our

ability to move airplanes around, information around, what our C-2 and ISR airman are able to do to provide real time change to missions. Your mission can change up to step time when you're getting ready to take off, and then as soon as you get airborne you can react and change to the environment as required to do whatever you have to do.

I'll tell one quick story and it's the story of Major [Dave Gosteptula]. He was a weapons officer in the 9th, the bones, and he went over there with [Things Gilbert], Squadron Commander Bones in the early deployment in the fight against ISIS. So Gost and his wingmen took off at 6:00 at night, and the first mission was they had was they escorted a coalition strike into Syria and it was Bahrainis, it was Emiratis, it was Jordanians, and Saudis, and the F-22 escort. They did deliberate targeting in accordance with the ATO, and then because, again, the capability of the F-22, it did tactical reconnaissance to see the success of those strikes.

Then they went out, picked up some F-16s,

came back in with the F-16s and did time sensitive dynamic retargeting of what intel was developing in combatant positions and combatant equipment. They took those out. Then they went back to the tanker, spent three hours hanging out on the tanker, and then they picked up a U.S. only package and went deep into Syria in the integrated air defense system, very heavily defended integrated air defense system with EF-18Gs, B-1s, and F-16s, again, and took out key communications node, and key ISIS leadership. By the time Gost and his wingmen landed they had done six different aerial mission sets and flown for almost 12 hours. That is flexibility, agility, speed range of air power, and that's what we can do with the air power that we have today with it in the hands of the incredible airman that we have.

It's not just the aircraft. If you look at what our intel, our DCGS, our Distributor Common Ground System, and our RP airman do. They're flexibility is as good, in many cases even better, than the other airplanes. They cannot change just

within an AOR, but they can change from CENTCOM to EUCOM to PAYCOM in a matter of minutes. I mean, the amount of work they do is incredible, and their ability from an RPAGCS and our Distributed Common Ground System and its ability to do the analysis of that and aid those fights is simply incredible.

There's a story, a Tech Sergeant, Luis Rodriguez, he was a central operator on MQ-9s, supported by the DGS, and he was doing convoy over watch. In the matter of a couple of seconds the mission needed to change to a troops in contact. So the entire enterprise, the RPAGCS, the Distributor [Gown] Station, and the analysts they all change to this. They went -- they got over-friendly forces. It was a danger close. Enemy's about 100 meters north of them. JTAC through the ground commander says, there they are. Take them out. Two hell fires later they devastated the enemy and saved the troops in contact. Then that night Tech Sergeant Rodriguez went home and had dinner with his family. That's the way we do air power. That's fifth generation and that's the new way

that we, as the Air Force, have taken the technology we have through remote split option, everything else we do, and have made it that much better.

If you look at our ISR and C-2 airman it is incredible what they do. If you look at what we're asking of those folks in the DCGS, we're trying to get to DCGS next, and we're looking for industries help. We're looking to get better at that. They are drowning in data. If you look at the amount of information that those young men and women are dealing with every day, how they find anything in that is unbelievable. The amount of information that's given to them is simply amazing. We have to help them figure out how to sift through that raw data and get better at it. We need to change data into knowledge to give us the decision advantage against our adversaries.

Going back to John Boyd, going back to the way airman think, we're better than any other air force in the world because we think inside of what the other potential adversaries think. We're better at it

then they are. We have to help these folks, and we have to get them that capability to get the information into decision advantage, so that we can continue to press the fight.

The other thing we have to do, and as General Lori Robinson talked about yesterday, we're never going to fight alone again. We know that. Our adversaries -- our Pacific air chiefs are here. Frank Gorenc faces the same thing in EUCOM. We face the same thing in CENTCOM, so we have to figure out how to collaborate and talk, and share information with our friends and partners. We've got to stop having systems and processes that can't share information across a coalition. This is illustrative of an example of a bunch of B-1 weapons officers are planning a strike into Syria and they needed a coalition because they were escorting coalition, and they ended up with a sheet of white paper on the floor drawing out the attack plans. We owe them better than that. We've got to get better than that. That's clearly not a B-1, and it's not the IUD CAOC. That is

General Robin Rand in the middle, by the way, in case anybody's wondering, so. Talking to his bomber guys.

But we have to get better at this. We know that we're going to do this with friends and partners, so how do we share that information. How do we make this collaborative so that we can do everything we need to do because we're going to fight with them. These are our great friends over here, the Pacific Air Chiefs. They're amazing. We have to be on the same sheet of music. We don't need our airman to be doing plans on a piece of paper on the floor of the CAOC. We owe them better than that.

Any time I talk about ISR I cannot talk about ISR without talking about command and control. I think those two are inextricably linked. It's decision capability and it's execution of theater air power at the command and control level at a theater level. I've been accused of being a C-2 zealot. I'm proud to say I am because I think it's that important. We do it better than anybody else in the world. The United States Air Force is the best at command and

control of anybody in the world, but our adversaries know that. Just like General MA in the PLA Air Force they're going to attack it. We see it today. They are going after our ability to command and control.

Command and control is two words. That's the other thing, we have a tendency to go command and control as if it's one thing. It's not. You can have great command organization. You can have a great commander's intent and an air operations directive and you can do all that right, but if you can't control your theater air power forces in the fight near to real time you don't have C-2. Our concept that tentative air power is centralized command, decentralized execution. That has been around since then Colonel Billy Mitchell, Battle of Saint-Mihiel.

We learned it again in World War II and North Africa. We have to be able to do that, but we have to be able to control those forces. We have to be able to exercise that control that goes with the command and the command organizations. John Hyten's one of the smartest guys we have in our Air Force.

He's brilliant. He'll tell you, you can fight satcom, it's hard, but you can do it. Move things around. You can fight satcom, but you need an architecture and an organization to do that. You can't do it if each type of communication is stove piped under a separate organization or a separate service and they can't talk to each other or somebody doesn't have centralized command of the satcom.

How are we going to take advantage of the aerial layered network? How do we make every coalition aircraft and U.S. aircraft a communications node, so you build an aeriated layer network and you get the mesh network across the battle space? What's next? We've done -- [inaudible] has been incredible. We're developing [inaudible] and MAPS is coming after that. How do we create that network capability to fight off adversaries attacking our C-2 nodes? And they will attack our C-2 nodes. How do we get there from here?

We're even doing things, we're looking at some great ideas. There's some great technology with

things like wide band HF, and we're trying to move forward on that in a tech demo to prove that we can do that with fidelity that we need to do to control air power. So we're working on all these things, but we have to, because we know every opponent that we could ever possibly face has watched what we do. They know if the United States owns everything more than 8 feet off the ground we will win. They're going to attack that. One of the ways they're going to attack that is C-2.

Last, but definitely not least, is our personnel recovery core function at air combat command. This is the epitome of a low density, high demand assets. In many cases, for our coalition partners to participate in operations they need to have U.S. personnel recovery, and they need to have it close, and they need to be able to rely on it. What these folks do is amazing. We've got to get better at it. We have to keep the combat helicopter on track. We have to keep that moving forward. We have to keep the HC-130J moving forward in that as well. We've got

to find the technologies to be able to do PR in a contested environment. What does that look like? What is that package?

They're developing some great capabilities and micro sensors at AFRL. AFRL is doing some other work, but these are things that we have to keep moving forward on because, again, a moral obligation we have is to pick up our folks that are down behind enemy lines. These guys do it. They're simply amazing at what they do.

Now, if anybody that knows my Scottish wife, Jillian, you will know that she made me put a slide in this speech with a guy in a kilt, so I had to do that. She'll tell you it's a very practical garment, by the way, but she's Scottish, so she would think that. But this is a story of that young man in the inset, and he's also the far left there on that picture of [Folks]. That's Tech Sergeant Highsted. A while back in Afghanistan he's one of our PR professionals, and there were 12 British paratroopers that were caught in the minefields, seven of them severely injured. He

went in, cabled down, and took all 12 of those folks out one at a time. That picture is taken with those folks because of what Tech Sergeant Highsted did to save their lives.

We owe him the most equipment, the best equipment, the best capability, and the best training we can give him. Because we all know what our enemy will do, absolutely anything. They're simply amazing, but we owe it to do him give him the equipment to do it, and we owe him to give him the latitude to use their minds the way they thing to be the best they can be, and there's an example of it right there with Tech Sergeant Highsted.

So before I get off this stage or before I take some questions I've just got a couple other things I want to talk about. I think we'll have a chance maybe to talk about this in the future. We are in the ragged edge. Our OPS tempo is unrelenting. If you look at what's going on in the world today it's incredible. The demand for theater air power across the globe is simply unmatched. If you think about it

there was a time when the Air Force was accused of new war-it is. Yet, we look at what's happening today and you look at the PRC and the South China Sea and the East China Sea. You look at little green men and Russian hybrid warfare. You look at North Korea. You look at what Iran potentially could do in the future and guess what? We needed to think about that.

At the same time, we thought hey, you know, we're out of Iraq. We'll be out of Afghanistan a year ago. So everything's good, right? Then failed states like Yemen and Libya. You look at ISIS and the advance of ISIS. Al Shabaab, Boko Haram, Al Qaeda, Taliban, pick it. Nothing's going away. With the capacity we have today our OPS tempo is simply unrelenting and we've got to figure this out. Part of it is our big I innovation from our airman, part of it is the technology. Part of it is we simply don't have the capacity to do everything that the combatant commanders ask us to do.

We have the best and brightest airman in the world. You all know that. We see them every day.

We've got to give them awards yesterday morning up here. We got to see 12 incredible airmen yesterday. I am really glad I don't have to compete against any one of those 12. I'd lose. They're amazing. I mean, they're simply amazing what our airmen are like. But whether we're willing to admit it or not we're burning them out. We are losing incredible airmen that love what they do because we're burning them out and we're asking too much of their families. We've got to figure out how to get through this. We've got to figure out the capacity discussion, and we've got to figure out how to take care of our airman and their families.

So this is my bottom line in this whole thing is we need -- and I know the United States does it. We always have and we always will. We produce the greatest technology in the world. We need that cutting edge technology. If we take that, and if we as a nation are committed to that the aerospace nation the AFA talks about we're committed to those technologies, and we hand it over to our incredible

airman we will continue to be the greatest Air Force on the planet.

Every one of us, our Air Force leadership, have to, we have a moral objective, to make sure that every airman, whether he's deployed down range or he's doing his mission from home station in garrison is trained, ready, capable, and equipped to do the mission that we are asking them to do. We owe it to those airmen. We owe it to their families, and we owe it to our nation.

Folks, it's been a great opportunity to talk to you today. I appreciate it. I'm more than -- I think I've got a little bit of time, so I'm more than happy to answer any questions if there's any out there. Thank you very much.

MR. VAN CLEEF: Since we're talking fifth generation stealth is kind of the centerpiece of all that. Since we've had such an advantage over our potential adversaries in stealth for a while now, but there's a lot of efforts out there to do anti-stealth defenses. Can you talk about that and the role

stealth will continue to play in the future? Whether or not it will require other things like anti-jam electronic warfare support in order to keep that edge?

GENERAL CARLISLE: Well, I can. So first of all, you know, I think anybody that thinks stealth is obsolete is simply naïve. I mean, if you look at the amount of systems out there, the amount of national resources our potential adversary nations have thrown in to everything they do. Whether it's weapon systems or radars or missiles or surface air missiles it's out there in a huge preponderance of capability. Stealth is going to be around and it's important for a long time to come.

But we can't, again, rest on that. I guess that was my point in the discussion is if you look at what our adversaries are doing with trying to get to anti-stealth technologies. They're out there and they're trying to do it. Or if you look at what our adversaries are doing in developing their own stealth capability. Like I said, the PAC-FA or the J-20, an electronic warfare realm, so we have to keep pushing

it. So I think stealth is clearly a part of the repertoire. It's part of our arsenal, but we have to go beyond that.

So the beyond that is electronic warfare. What happens if we can figure out a way that we can go across a spectrum from say, 20 megahertz to 40 gigahertz with electronic warfare? Something that nobody else can do. How about if we can figure out a way that when a radar hits something we suck up all that energy so there's no reflection? That changes the idea of stealth pretty significantly. How do you work across the spectrum so you're looking multi-spectral stealth? What is the next generation airplane going to look it? You know, obviously, it's well above my pay grade, but I think there's going to be another aircraft in the future post F-22, F-35. What does that six generation airplane look like? How does it do multi-spectral stealth?

So we're working on it. We're working on electronic warfare realm. We're working on improving stealth and doing multi-spectral stealth, and we're

working on it with how we employ and the tactics, techniques, and procedures. But again, I would say that anybody that says stealth is obsolete that's a naïve approach. There's so much more to it than that, and it's so much part of what we're able to do in how we conduct the fight today.

MR. VAN CLEEF: Thank you. Let me back up a little bit. You know, we had the F-15, F-16 mix in the back. We envisioned an F-22, F-35 mix where the F-22 would be the big daddy on air supremacy, but now with that having been truncated in a fairly small fleet we're going to be relying on the F-35 for air superiority as well. Would you talk about its capabilities in that arena?

GENERAL CARLISLE: I think this is not a newsflash for anybody. We don't have enough F-22s. That's a fact of life. We didn't buy enough. We don't have enough. If you look at the way we're using them today and the current fight we're in, when you look at what we would do in a future fight we flat don't have enough F-22s. That's a fact. But we have

what we have, and they're doing incredible work. What the airmen flying those things are doing is phenomenal.

So the F-35 is -- and, again, it's in a developmental stage. It's still got some challenges, but I truly believe -- it's ahead of the F-22 at the same stage in its development, and I think the F-35's going to be a fantastic airplane. It is not a super cruise and it's not a maneuverability airplane. That's not what it was designed for. It's a multi-role airplane that has an incredibly comprehensive, powerful, integrated, avionics and sensor suite. It has incredible electronic warfare in both the ECM and ECCM capability. So I think in the future -- I do believe that there's going to be still that high/low mix. You're going to need the raptors to be able to do some of those things against a high-end fight to take some things down to allow the rest of the force, which will include leading edge F-35s, to penetrate denied airspace.

So you're still going to have to do that and

we're going to do it with 180 or so F-22s we have. But the F-35, you know, I know there was a lot of press about the F-16 versus F-35, you know, that's not what the airplane was designed to do. It's designed to do that incredible multi-role capability with the sensor suite and the integration and the [SA] it provide the pilot. It's the electronic warfare piece of that. It's all those things that make it the airplane that it is. They're going to be used in a role and F-35 against any fourth generation airplane, probably other than a close in maneuvering fight is going to do exceedingly well. Its capability to detect adversaries when they don't even know it's there. Its weapons capability and how it's loaded out, depending on what that looks like, it's going to be a great airplane and do great work. But it's going to be a combination of F-22s and F-25s in the future.

MR. VAN CLEEF: This will have to be the final question. You started off by saying we need to change how we think, but technology was still the majority of your speech, so what do you mean or can

you elaborate on how we should be thinking?

GENERAL CARLISLE: Maybe I misspoke a little bit. What I mean is we need to take advantage of the way our airman think. I truly believe our Air Force, as I've said, we're service born out of technology. The generation, those 12 outstanding airmen you see, the young men and women we see around the stage today they think differently than I do. I mean, I was telling somebody the other day I was a captain in the Cold War, I was a major during Desert Storm. I was a squadron commander in OG during Norther Watch and Southern Watch, and I was a wing commander at Eglin and Elmendorf during Iraqi Freedom and Enduring Freedom.

That's a different world than what the kids are growing up today in. They think differently. They have an ability to do things that we don't think of. We have to unleash that thought. Again, if you look at some of those things that our airmen are doing with the technology we give them they are making it so much better. Look at what they do with the DCGS and

the RPAs. Look at what our C-2 enterprise does with what they have. It's phenomenal. So my push was we need to unleash the brainpower of these incredible young airmen, give them the technology, unleash their brainpower, and then make sure we take care of them and their families so they stay with us.

MR. VAN CLEEF: Thank you. Once again, you can see by the size of the crowd here that this is a popular topic, and we appreciate you coming and speaking to us about this. You mentioned that you're a historian, so we'd like to provide you this little bio on Curt LaMay. Thank you so much.

GENERAL CARLISLE: Thanks, Scott. I really appreciate it. Thank you very much.

MR. VAN CLEEF: Thanks, folks.

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