

Combat Credibility in Air and Space

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Col. Mark Gunzinger, USAF (Ret.):

So good afternoon ladies and gentlemen, and welcome to the last panel of the day on enhancing combat credibility in air and space. So I'm Mark Gunzinger. You just saw my picture. It's a horrible picture. I'm Mitchell Institute's director for future concepts and capability assessments and I'm very glad that you had joined us today and to those who are watching online, thank you as well. So China and Russia's development and proliferation of advanced air missile defenses, analyze satellite weapons and other counter intervention capabilities will make joint force operations in the air and space domains more challenging than ever before. I don't need to tell you that, you know that. Our military must be prepared to counter those threats, encounter aggression from great powers as well as regional bad actors and threats from terrorist groups, many who've obtained those kinds of capabilities.

So enhancing the US combat credibility is a big job. Fielding a combat credible force has been questioned by many frankly. They said our combat credibility is eroding and this fine group of panelists, thank you so much for joining us today is going to tell you why that is simply not true. The Air Force and the Space Force are continuously modernizing and building the capabilities and capacity needed to prevail against this unprecedented array of threats that we know so well. Maintaining our nation's freedom of action in the air, space and cyber domains also going to require new operating concepts, realistic training and asymmetric capabilities to ensure our Airmen and Guardians are prepared to take on any fight, anywhere on the face of the earth and in space. So we're very privileged to have this fine group today. I'm going to introduce first, thank you for coming, Brigadier General Todd Moore who serves as the deputy commander of the Space Training and Readiness Command, STARCOM. It's good to have friends.

So for those of you who do not know, STARCOM is responsible for ensuring America's Guardians are trained and ready to win in a contested space environment as we heard yesterday. And that mission is critical to our nation's ability to compete and prevail over the pacing threat. Next we welcome Dr. Kelly Hammett to the stage. And Dr. Hammett is the director and program executive officer of the Space Rapid Capabilities Office, which is responsible for rapidly delivering first year kind operational space capabilities that are going to protect our space assets, and defend our joint forces from space enabled attacks. Third, we have Brigadier General Jason Bartolomei, the Air Force... So far you're in the lead.

Brig. Gen. Jason E. Bartolomei:

Eat your heart out, Space Force.

Col. Mark Gunzinger, USAF (Ret.):

This is great. The PEO for Weapons and Director of the Armament Directorate at the Air Force Life Cycle Management Center. And Jason is responsible for the planning and execution of all lifecycle activities for air delivered munitions. And finally, we're very fortunate to have Colonel Daniel Lehoski join us and you Lager, call sign is Commander. Well that's a split decision now. And your unit is the focal point for testing new operational capabilities and evaluating field lead capabilities for the Air Force is combat Air Force. So Colonel Lehoski was previously the commandant of the Air Force Weapons School at Nellis. So I like to jump right into questions for our distinguished panelists. Just to start off, it would be great if you would each very briefly give us your perspective on what constitutes the baseline elements of a credible

military force in general and then perhaps some specifics on what makes today's Air Force and today's Space Force combat credible.

Brig. Gen. Todd Moore:

We go first?

Col. Mark Gunzinger, USAF (Ret.):

Yes.

Brig. Gen. Todd Moore:

All right. Good afternoon everybody. It's great to... I saw you before the lights came on, but now I can't see you, but definitely heard you. Thanks for being here. I would say that the CSO has made it clear that having a resilient ready and combat credible force is what he's going for, and that's what we're aiming for. I would say some of the baseline elements of that is operational tests, making sure that our systems are going to work as designed in the environment and understanding the full performance of those things. That is something relatively new for us as a Space Force and being able to produce a quantification of probability of effect and a confidence interval, but really understanding the full ability of a system is really important, particularly for the combat planners. Something that has a 20% probability of effect is going to drive a different plan than something that has a 90% probability of effect.

The second thing is getting our operators on the system and getting after tactically relevant training that is dynamic and challenging, where they are able to operate and deploy, where they're doing more than just procedures but driving really after an intimate understanding of how their system works and really practicing their skill. The last part is the aggressors. We absolutely need our capabilities put up against an adversary force before we ever meet our adversaries. The chief of staff talked about the importance of the first 10 missions, space is no different. And being able to have combat credibility is knowing that one, your system's going to work within an envelope. Two, you're able to employ it, and three you're able to outmaneuver and outthink an adversary. We're doing those things right now through activities like Scarlet Star, where we're using Tetra-1 for space domain awareness. We're using resources like Moonlight Defender to refine cyber capabilities. We're using Black Skies to refine electronic warfare capabilities.

We have got to get out of the business of tactics being defined in PowerPoint, Excel and STK, that's no longer good enough, and we're rapidly moving in that direction. For the Guardians in the room, for those of you who support the Space Force, we absolutely need you intellectually engaged, curious. I need you to be impatiently patient, but more impatient than anything and really push us to deliver what we need. And for the industry partners in the room, delivering realism is the most important thing I can get and it needs to be well beyond just physics-based. Thanks.

Dr. Kelly D. Hammett:

Nice job. Well, I want to thank AFA and Gonzo for having me on the panel today. I want to thank all the members of the audience who did not figure out that happy hour has started in the exhibit hall, although from some of your enthusiasm, I think you hit the early happy hour that started about an hour ago in the exhibit hall. So anyway, thanks for being here to join us with the panel. I didn't know exactly how I was going to talk to this, but I've got a couple different approaches. I'm going to channel my best Greg Gagnon and say combat credibility in space looks a lot like Russia and China and what they're doing in February and March of this year. They have eight new systems going up in the next two months and

we'll get to see those systems operating, testing, training, if we're watching and we should watch and learn from that.

Before we had operational imperative, OIs, I'm an old school guy, we had operating instructions, now before Secretary Wilson canceled them all. There actually is an OI, an Air Force OI that governs this. So what does it mean to have combat credibility? It means they're operationally safe, suitable and effective. So we have to build capabilities that meet all those things and we have to figure that out. Safety of weapon systems back in the old day before I was a space guy, I was a chief engineer on a bunch of directed energy weapons programs. The Space Force is going to have to figure out how to make things emanate when they press the button and not emanate when you don't press the button. Back to knowing that you're going to have a predictable effect when you want it and when you need it. And you're going to have to see two of these things.

One of our programs is the Rapid Resilient Command and Control program. So I was just in a panel a couple of weeks ago and we're talking about the time and tempo of conflict and space and what that's going to look like in the next just few years. We're going to have tens of objects on orbit that all need to move in hours, minutes and seconds, not days with planning cycles that take forever to do that. And then of course we're going to have to test and train on that. So we're trying to bring the software, the networks, the antennas that will be the last tactical mile for the space war fight if we ever get there and hopefully we don't. But that's the type of thing we're going to have to bring in soon. Thanks.

Brig. Gen. Jason E. Bartolomei:

And thanks, Gonzo. So from a weapons perspective, I think that year of great power competition is going to... It's challenging because in the olden days it felt like we could look at the future and point towards a single point future and plan for that. And when I look at the great power competition, the future, there's multiple futures you have to be prepared for. And what that means for weapons is that we're going to need to have weapons that are competitive to fight in multiple futures. It could be one that looks like a tyranny of distance and a long range fight or it could be a knife fight where we're in really close and we need to be able to do what we need to do. And some of the operations we're looking at or plans we're looking at, you might have that in the same fight.

So from a weapon standpoint, I think that the need for high low mix is going to be a big part of the conversation where when we look at the weapons portfolio and you think about it as a pyramid, the top end of the pyramid are these very exquisite, fire breathing weapons that we have that are terrifying. And then once we move down that pyramid, we're going to have maybe less exquisite, more affordable weapons that are on the low end and figuring out how we are able to deploy high low mixes of weapons and having those in the inventory are things that we're thinking about very intensely. So you've heard a lot about open, agile and digital. I think one of the things that we're seeing right now is that open is extremely important in weapons. And I think we're at an inflection point for how you're going to see the design of weapons that are more modular and more open.

And as I look across the portfolio, what I'm seeing is that you're starting to see technologies and capabilities that used to sit only in one class of weapons being shared by weapons of other diameters of other sizes. And what's really interesting is that you see that we might be able to arrange and we are arranging those technologies in ways that will allow us to actually hit the high low mix that I described about. We also think that digital and agile is going to be important. The other thing that I think about from a competitive standpoint is that in the force design we think about the operational capabilities and what we need to do in the fight, but from my stance, it also will require the full weight of the industrial base to be able to bring the full weight of what we do to be able to replenish the inventories as we go.

So we're spending a lot of time on exploring, well how is it that we could bring speed to weapons in the fight?

We're watching what's happening right now in Ukraine and we're seeing how quickly the innovation cycles are moving there. And what you're seeing right now for our own weapons is we're learning from the playbooks we're seeing there and we're trying to employ those playbooks as we posture for what is coming ahead. It's an exciting time. One of the things that we're thinking about is we need everybody from industry to help participate in this one. Not just the traditionals but the non-traditionals. So as we're moving towards more open, more modular systems, we see that the ornaments and the technologies that are available, some of them are commercial, some of them are being used on different classes of weapons, not just the things that I buy, but in things like CCAs and aircraft. We're looking at ways to bring those technologies more seamlessly into the inventory to be able to win.

So I think it's an exciting time. I think we're at a pivotal point in our history and at least in my portfolio of how we're posturing to be able to compete. I see a lot of analogies in what the Space Force is doing, especially in what we saw from General Saltzman yesterday. So these are the blueprints and I'm pretty excited about where we stand for that. Thanks.

Col. Daniel Lehoski:

First, thanks Gonzo and AFA for the opportunity to speak at the panel today. For me, this question is near and dear to my heart in the operational assessment evaluation. For us in the wing we're the last check and balance or the last stamp before capability that you all field from industry into the acquisition cycle ends up with us and we're the last check and balance before it goes to the war fighter in the field. So combat credibility is something that's on my mind each and every day. For me that gets to three key components or three legs of a bar stool all have to be in balance and at first is relevant capability. I think the assumptions for a lot of the things we're doing have radically changed. One the threat has radically changed over the past few years. And two, our blue CONOPS are changing each and every day.

The fight that we'll fight in a couple of years if deterrence fails is going to be a radically different fight than what we did 10 years ago or even five years ago based on the changes in blue and red CONOPS. So we have to be honest enough to check our assumptions and make sure that capability we're fielding is relevant in relation to those assumptions. Second is mass and sufficient quantities of weapons, weapons systems and operators. The Airmen and Guardians who are going to execute the war if deterrence fails. I know we're going to talk more on a high low mix later, so I won't belabor that one. And third is trained aircrew, trained Guardians. They're confident in the tactics and techniques and procedures that we have vetted through operational tests on night one.

There is no doubt in my mind that our captains and our tech sergeants run circles around our adversaries and they can integrate and employ capability in ways that on day two of the war, our adversaries are going to wake up and go, "Wow, that was impressive." And if we give them the tools and the training to do that, there's no doubt in my mind they will.

Col. Mark Gunzinger, USAF (Ret.):

So that was a great start. I heard a couple words here. Mass, radically different, new approaches. There's been a lot in the press and a lot that AFA and metro have written about the Air Forces, Space Forces need for more combat capacity. The problem here is the Air Force, DOD for that matter really doesn't have the budget needed to buy everything that's required to ensure our combat credibility in the future. And when we're talking mass, we're not talking mass on mass attrition warfare, we're talking asymmetric warfare. Coming up with new operating concepts and new capabilities to judo throw our opponents and seize the advantage. So I'd like to ask all of you, just as DARPA's Assault Breaker initiative

did in the past, it developed stealth technologies, precision guidance, network, information technologies. What are some of the asymmetric capabilities that you see in the future for air and space operations? What do you think promises to really change the way we conduct our operations in the air and space in the future? So this is for all of you.

Brig. Gen. Todd Moore:

Okay. I'll go quick because I'm interested in what these guys are going to say. For me, I would say there's three things. The first one is having a digital environment that is tactically accurate and relevant where our Guardians are integrated with other joint partners, are able to rehearse and practice and script and push in a way that we don't have today. Having that emines environment is going to give us more time and more access to messing up and learning and fixing and trying again. So I think that's the first thing. The second thing is integrating with industry, commercial and civil partners for the purpose of mass and for speed of data and information coming in. If all we do is use US government systems only and we put our blinders on to everything else that's out there, we're really going to fall short.

And lastly, I believe I've got the STARCOM jag in the room. There you go. So within the law of war, I don't believe in being honest with my enemy. I think we have to relearn deception. I think we have to relearn how to do things so that we are unpredictable. I don't know if I can actually say this, Jimmy. I think we need to lie, straight away. We might have to hide in plain sight and I need my adversary to doubt every last thing they look at because it might be something different. And I want them to doubt themselves. I want them to doubt what they know and I want them to think that I'm not just 10 feet tall but 20 feet tall. And then when I show up I want to be 30 feet tall. Back to the point. So thanks

Col. Daniel Lehoski:

Gonzo, for me it comes down to two key pillars. First is electronic warfare. I'm all for kinetics. Kinetics are fun and kinetics do great things on the battlefield. But I think our asymmetric advantage is by with and through dominance of the electromagnetic spectrum in all phases of the conflict, starting with potentially deception. I think we have to prioritize that. If we're going to look at the cost curve and we're going to stay on the right side of that cost curve, both offensively and defensively we've got to get better at our electronic warfare capabilities and there's some phenomenal capabilities out there that we can bring to bear on the adversary tonight if needed. When I look at that, the prominence of EW and I overlay that with the fight we may have to fight if deterrence fails in the Pacific, the tyranny distance is real. And it's very real for the air component. It's very real for our partners on the ground, and it's very real for the maritime component.

The folks who have a little bit easier challenge with that is Space Force. And when I look at the things that General Moore and his team and Dr. Hammett are bringing on board, things like orbital warfare and space EW are going to be our trump cards on night one of the war, especially when we put them in the hands of the Guardians that they're training. The second one kind of ties into that is mission command. I think this is part of our DNA in the Air Force, decentralized execution. Think we've gotten away from it a little bit, but the DNA is still there and it's still strong. We got to knock off some of the rust. But there is no doubt in my mind that we have captains and tech sergeants, they're going to run circles around our adversaries as long as we give them the authorities and training to do so prior to night one.

Dr. Kelly D. Hammett:

Sure. I'll just pile onto that last one real quick. I guess timing is really important. If you invite me back in six months, I might be able to say a lot more about what I can talk about than what I can say up here now. So I think we need, as I said before, space domain awareness, situational awareness on board our

satellites, our systems so that we know when things are happening and we see that and we can respond again at relevant timelines. And then we have to have a variety of response options and figure out how to test those and use those without, I will say destroying the space environment without being irresponsible. So back to the digital range, absolutely. You're going to have to do a lot of work there and it's coming. So EW is coming, other things are coming, so we're going to be playing with these things and figuring out what really makes the difference.

Brig. Gen. Jason E. Bartolomei:

Yeah. So one of the core values in the Armament Directorate is winning together. That's one of our keys. And I think that to answer your question, Gonzo, winning together for us is not only winning together inside the Air Force, but winning together with industry and winning together with our coalition partners. So I think one of the things that we're really focused on, and again I talk a little bit about open and modular, is that we think there are ways to design what we need to do so that our partners in Europe and our partners in the Pacific can join us. I think it's going to surprise the adversary about when we get that together, how tough it's going to be to fight us because not only are we going to be able to replenish and do what we need to do from a weapon standpoint, there's some really great ideas out there to do things that are very effective.

And I think we're going to be able to do it in rates in ways that are not anything that looks like what we did in the 20th century. It's going to look a little bit different. Now I've spent quite a bit of time in the Pacific, so I've been to Australia, I've been into Norway, I've been to the UK and all around the US looking at the barriers to fabricate and design things. And what you're seeing is the barriers to actually develop and design the type of systems that win the wars is getting lower and lower. And if we're winning together and we're bringing that ingenuity together, it's quite a fearsome mix. And I'll tell you that when I spend time with General Job and the guys thinking deeply about force design, it's that winning together and figuring out the digital side of things, which I thought was a really great piece of it, and doing it with our partners both in a manufacturing design perspective is you're starting...

I'm already seeing some incredibly interesting concepts and some of them we're building right now that give me a lot of hope for where we're going. There's a little bit of work to do in terms of how we continue to scale it, but I'll tell you that the marketplace has a lot of really smart people thinking very differently to do things to defend our country and our coalition partners are right there with us. And I think that's going to be a big piece, Gonzo.

Col. Mark Gunzinger, USAF (Ret.):

I agree with you guys. I'll tell you that the heart of deterrence is having a combat capabilities capacity convinces your adversary that my war plan's not going to work. My war plan just went red. And driving uncertainty in equations critically important, whether it be creating effects out the back of an airlifter. Hey, every airlifter the Air Force has could kill me. Or CCAs, is it a sensor, is it a shooter. F22 or an F35, I don't know. I have to treat everything as a threat. That's critically important. So this question is for you, general and Lager. Affordable mass, munitions for affordable mass. So for decades, and I lived through a deity budgeteers resorted to cutting munitions buys as an easy way to balance the books. Happened every budget cycle.

The war in Ukraine has showed what happens if you are caught out with a weapons inventory, ammunitions inventory that's inadequate. We certainly don't want that to happen to us, because the most advanced fighter force, bomber force, CCAs and so forth, if they don't have weapons then they're not going to be combat credible. So beyond funding, what do you two see as the biggest hurdles and opportunities for scaling up our ammunitions inventory to meet operational demand?

Brig. Gen. Jason E. Bartolomei:

Yeah. So I'll start and then Lager can fix whatever I say wrong, Lager. Well, I think the first thing that is on my mind is building credible plays in the playbook that are available to us so that when crises come, we have solid place to play. And I think one of the interesting storylines that are evolving and a lot of folks in the audience will probably track is that there are certain design decisions in a weapon that a lot of energy goes into making those decisions a priority. But if you look across those, there are some very common decisions that you can anchor on. And one of the things that we've been working on is trying to provide a lot more clarity, and cooperation. I use that word to cooperate in a competitive environment. It's a great word, I use it all the time, I just made it up right now.

No. But to cooperate and compete on a common backbone for some of the key decisions that really lower the CapEx costs and a lot of the design calories that go into designing a new weapon. And what we're trying to do is trying to lower that so the big guys and even some of the smaller guys don't see it as such a huge mountain to climb to offer something that they think would be credible. So what we're already seeing right now is that we are defining a weapon open system architecture, you may have heard. And we actually think that we're coming close to another version of that that's even more prescriptive in some areas, but gives a lot of lift not just for stateside weapons providers, but also for our partners overseas that are coalition partners in what they design. But by doing that, what you're doing is you're creating plays in the playbook for different outer mole lines and diameters where we can bring different technologies in and offer those at scales that right now is not anything we are used to seeing with our old designs.

So we've got a low cost weapon that we're pursuing right now called, well it's enterprise test vehicle and we call it Franklin, which is named after the great Aretha Franklin, which it's a respectable weapon. So we've named it the Franklin out of the queen of respect. And the idea there is that we're designing a weapon with a common backbone that we think is one that can be used to actually do more exquisite type of things, but one that would at least get us something that's respectable and affordable and then for a very hopefully, distributively manufacturable, itolerable low cost way, we could mass produce it. But if we needed to dial in capabilities that need to be more sophisticated, we could do that very easily. So far our mission partners, especially our industry partners have been really the leaders in helping us think through that.

So we've got some big companies that you guys all know that are brilliant and they're thinking deeply about that. And we've got some non-traditionals that haven't been in the weapon business that have some incredibly interesting ideas on this space. So we see that as a big way. Now the big budgets necessarily aren't there Gonzo, but the plays in the playbook are getting there. And some of them are going to be ready-made and I'm hoping we don't have to use all those plays, but if we have to, we'll be ready.

Col. Mark Gunzinger, USAF (Ret.):

Is itolerable a word?

Brig. Gen. Jason E. Bartolomei:

Itolerable is a word and it was actually trademarked by one of the gentlemen sitting in the front and I'll let you meet him afterwards.

Col. Daniel Lehoski:

I'll just pile on real quick. I couldn't agree more with General Bartolomei. I think as far as a hurdle, honestly, it's our own internal biases. Our Air Force is built on weapon systems and we look at things

through a weapon system lens and things have changed. The good news is we've got a great case study that's ongoing in Ukraine where we can see the effect of low cost mass and what it can do in the battle space and now you have to blend that with the exquisite. You've got to have the boot knife, but you also got to have the Patriot missile and they're showing us some good lessons learned. And I think the collective team across the Department of Air Force is seeing that and we're learning from it.

So the opportunity is we're getting to watch in real time what it can do on the battle space, that's going into our li fly test events. And we're showing things like palletized munitions, what it can do. C-17 with some JASSM on the back, what it can bring to the battle space. So that's a huge opportunity, a luxury we have prior to any conflict with a peer.

Col. Mark Gunzinger, USAF (Ret.):

Excellent. Thank you very much. Dr. this is for you.

Dr. Kelly D. Hammett:

Okay.

Col. Mark Gunzinger, USAF (Ret.):

Potential adversaries have been testing and fielding offense. I say potential adversaries, they're adversaries. Testing and fielding offensive weapons to counter our advantage in space and they've been doing that for years. And to be frank, we've only recently acknowledged that space is a war fighting domain. It's a domain where we can win and lose wars. So to maintain our space advantages, we need to accelerate the development and the fielding of new capabilities to respond to these threats. What is the Space RCO doing to rapidly deliver those capabilities to the extent you can talk about it?

Dr. Kelly D. Hammett:

Sure. I can talk a little bit about it. Same motto as winning together, partnering to win. We're working with our teammates on the receiving end of capabilities we might or might not be building, to test them in a rapid fashion integrated test teams. That's the strategy for the Space Force. A lot of digital work there. And then agreements at the leadership level on, there was a lot of conversation earlier about MVP type of work. Get something out there, start exercising it, start playing with it, and bring the rest of what General Whiting used to call the fully burdened systems a little bit later in the pipeline. But if we take two or three years to build it and deliver something and then we take five years to OT it, we're not going to be ready.

So it's some of those process and policy things back to what I said operationally safe, suitable, and effective and being able to assert those things without extensive timelines to get to those fielding decisions for the things that we're working on. And great partnership with General Moore, General Seba, General Miller, the new commander at SpOC on how to move fast in this area. So fast on the front end, fast on the back end.

Col. Mark Gunzinger, USAF (Ret.):

That's great. Thank you Dr. Hammett. And that's a great segue to my next question, which is for General Moore, and Lager I invite you to jump in as well. So you talked about Space Force's intent to develop an operational test and training infrastructure that is going to provide realistic training to Guardians against simulated adversary. So as I understand it, OTTI is going to be absolutely critical to ensuring the Space Force is going to be able to train like they will have to fight to secure our interests in from and through

space. So you're leading effort, STARCOM is leading that effort. Could you elaborate on some of the key elements OTTI, top priorities and give us an idea of the timeline for developing them?

Brig. Gen. Todd Moore:

Yeah. Sure. So just to level set on OTTI, it is the live virtual constructive systems of systems, environment we're going to use for a test training and tactics development that's operationally relevant and tactically accurate. And if anybody has a bingo card and did hit bingo with all those words, I don't know how I missed you. In all sincerity, if I were to take it down a notch, it is the place where the Guardians are going to get sweaty. It's where they're going to be tired. It's where they're going to be pushed around. The place to discover you're not ready to be assaulted is not at 3:00 o'clock in LoDo, nothing against the City of Denver. I love it here. The place to get jumped is in the gym. The place to get jumped is when your partner gets you and you're on your back on the ground, you know that next punch or that next kick isn't coming. You know you got a teammate who's going to pick you up and go, "Hey, next time don't drop your hands. Hey, next time don't stand on the foot that way."

That has got to be what we build is that place where we learn how to fight in a way that we as a Space Force have never done in the past. And it is really relying on the capabilities that are being developed by Space RCO and thinking critically and having that and being ready for that. What I would say certainly from a mission priority perspective, my boss in the front row, so I want to make sure I get some points here. Bottom line is we've got to protect the high value assets and we've got to deny our adversaries the capabilities that they're going to use to enable their surface and air forces in an attempt to gain advantage over our joint forces. That is what we're focusing on. In the near term, by the end of this year, we expect to have a beta version of our synthetic environment to be able to start demonstrating those things.

We are going to continue to integrate and define the roadmaps for the capabilities that we have for the live and the virtual and the constructive ranges, so that we can communicate to Congress and our joint leadership and our service leadership on where we have gaps. Being able to help them understand the implications to the joint force, that if we allow those gaps to exist, here's the potential cost to that. I would then say the last thing is really trying to build out the blue and red models. Understanding the capabilities of our adversaries. We're watching them closely, we need to study them relentlessly. We need to be able to fill in the gaps so the things we don't know with what reasonable engineering looks like. And that is where we're going. For the industry partners in the room, expect to see a series of RFPs and industry days coming out over the next few months or so. We've absolutely got to partner with you. You're going to help us get over the line quickly because time is not on our side. Thanks.

Col. Daniel Lehoski:

Just real quick on that, I couldn't agree more. The OTTI piece is absolutely critical. The combat capability and capacity we're building over the next few years as we modernize the Air Force is going to be for not if we don't have a operational test and training infrastructure that allows both tests and training. We all have the luxury. All the old people in the room, my age and older had the luxury of getting jumped as General Moore said on things like the NTTR and it was very realistic for a former Soviet Union threat. We've got to modernize to give the next generation that same luxury that we all had. The synthetic is absolutely critical to that. We can't do everything li fly. We got to keep someplace hidden from the adversary until night one. So we got to do those in the sim if we're going to integrate across the air space domain. So it's absolutely critical.

If you're looking for a good read, we've been here before as an Air Force. Right after Vietnam, we kicked off the Red Baron report and we did a study on why our kill ratios were not what they were and identify

training and OTTI limitations as a key root cause of that. That led to things like Red Flag and the aggressors and expanding the weapons school. So we've been there before, we just got to do it again.

Col. Mark Gunzinger, USAF (Ret.):

Okay. So we are rapidly running out of time and we have more questions than time, which is frankly always a good thing. But I do want to touch on ASAT with Dr. Hammett. So today, non-kinetic jamming frankly is one of the few methods we have to counter an adversaries satellites. But as we've seen our competitors demonstrate there are other non-kinetic methods like lasing and of course kinetic and a satellite capabilities that are fielded and ready for combat, frankly. Do you think classification issues make it more difficult to develop these capabilities and frankly communicate to our adversaries that it's not worth aggressing against our solid architecture?

Dr. Kelly D. Hammett:

So they absolutely do, but there is a nice element of being able to keep things hidden till night one. So that's the pro. The con is specialized facilities, networks. People with very high clearances and keeping that workforce and trained on the acquisition things that we're trying to do. But as I said earlier, I alluded to and somebody, I think it was General Pepper said earlier today, DepSecDef signed a memo following up on Jake Sullivan who wrote a memo from the White House on shifting administration policy, opening of the kamono on a number of things.

I haven't had the meeting yet with my boss, the Honorable Calvelli, to talk about what that means for my portfolio. But I think the department writ large in the SAP enterprise reform activities is looking to declassify a number of things to speed our ability to get things to the fight. And even more importantly, as General Pepper said, to integrate them in operations with the systems of systems that have to go. And I know General Crops he's walking out the door, but he and his team have been all over that as he tries to do the hardest job in the department of the Air Force. So go have a beer, Luke. But yeah, so it is a bit of a hindrance and we're working on it.

Col. Mark Gunzinger, USAF (Ret.):

Okay. So let's do a lightning round here. Maybe 20 seconds, 25 seconds to wrap up your thoughts on a combat credible force of the future.

Dr. Kelly D. Hammett:

I'll just jump right back in. This is an evolving story for the Space Force, and I'm just going to say, as my dad used to say, hide and watch, because it will become more clear where we're headed as we go down this journey and we establish that it's the chief's number one LOE. So we have to figure out how to come out of the closet on some of these things and be credible with our capabilities in the space domain.

Col. Mark Gunzinger, USAF (Ret.):

So strategic messaging is a big part of that. And General Moore.

Brig. Gen. Todd Moore:

Yeah. I totally agree with that assessment. I think part of it is more than just the system, it's how we command and control it, how we understand how it fits into a war plan, how it fits into a JSOP, being able to rehearse it and helping Guardians learn through failure before night one.

Col. Mark Gunzinger, USAF (Ret.):

Very good. Jason.

Brig. Gen. Jason E. Bartolomei:

Yeah. I think that urgency is really the missing element right now is to wake up all of the elements of the national power that we need to be ready. And if they're awake and we play the plays that are going to play, then I think it's a bad day for the bad guys. So I just think we need to move out with urgency because the ideas are on the table and we just need to execute.

Col. Mark Gunzinger, USAF (Ret.):

Lager.

Col. Daniel Lehoski:

As we go forward, I know there's a lot of challenges we are working through in the Department of Air Force. But the thing that makes me feel comfortable at night is the Airmen and Guardians we have that'll be the ones fighting the fight if deterrence fails and our adversaries don't have anything close to that.

Col. Mark Gunzinger, USAF (Ret.):

Okay. So I'm going to steal 20 seconds of your time and read you a quote. And I'm now speaking as an American citizen, not a member of Mitchell Institute or AFA. I want to read you a quote from Senator McConnell. He said this Sunday, "We will give those who crave our leadership more reason to wonder if it's in decline, or will we invest in the credibility that underpins our entire way of life?" He was asking a question. And he was referring to a different issue in terms of NATO and so forth. But it applies exactly to what we've been talking about here. What you said gentlemen will not happen without adequate resources. The Air Force and the Space Force, the secretary, you're doing your job to make this and ensure we continue to have a combat credible force in the future. Now it's time for Congress to do its job. Provide our Airmen and Guardians with the capabilities and the resources they need to deter and if necessary to win in the future. And with that, I thank you again for attending this symposium and have a great air and space power kinda day.

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