Spacepower Security Forum 2023 | Space's Role in North American Defense: Missile Warning and Tracking

[00:00:00] **Lt Gen Guastella, USAF (Ret.):** All right. Okay, as our coffee drinkers are filing their way back in here I'm fired up for the panel today. It's my pleasure to introduce our next session. As adversaries today are increasingly developing long-range weapons that our ground-based missile warning are unable to track quickly enough to queue defenses. And they're also fielding a variety of anti-satellite or ASAT weapons meant to degrade or destroy our existing missile warning sensors and satellites. And this panel will discuss the operational concepts and associated technologies required to address some of these threats. And today, I'm very pleased to introduce someone we've already heard from out there a little bit, but our Chief Operating Officer of the United States Space Forces, Lt. Gen. DeAnna Burt; the President of Space and Airborne Systems at L3Harris, Ed Zoiss; and last but not least, our Senior Fellow for Space Power Studies at the Mitchell Institute, Tim Ryan. Good to see you, Tim.

Yeah. But before I start the panel, I thought we'd do, I'll do a little warfighting story about, because Salty mentioned th- that the Space Force Guardians are some of the best and brightest our nation has. And I was the CFAC at the time, the Coalition Forces Air Component Commander engaged in the Defeat ISIS Mission, Afghanistan Mission and I also had a space role as a space control authority. I commanded some of the terrestrial based offensive, defensive space control forces. I asked our Director of Space Forces every week, I wanted to hear a space topic so that even... Because we're always focused on ISIS and stuff like that. I wanted to hear something for, from the space community to just broaden us, make us think jointly and thinking to space domain.

And our Space 4 had an excellent briefing team come up there. And it was a young lieutenant. It, now it's a Guardian brief an excellent job up there on a space topic. And at the end of the briefing, I go, "Lieutenant, that was a, that was an excellent briefing. Can you help clarify something for me because I don't really understand it, this one part of it." And she looks at me and she says, "Sir, we've dumbed this down as much as we could." [laughs]. Yeah. So needless to say, it was Salty in there too. So everyone falls out of their chair, and it revealed the limits of my Alabama po- Alabama public schooling.

But as a courtesy, for those that aren't very smart, they gave me the thing that says, "AFCENT, Space Forces will dumb it down for you, sir." And so anyway, it's great to be up here with the Guardian and maybe the folks at industry that are passionate about this domain. With that, Spice, we'll, begin with you. The current missile warning architecture. It was initially designed to deal with ICBMs. And considering the 53-year run of DSP, Defense Support Program, it's just, its mission just sunset. And so now we must consider everything from hypersonic weapons, cruise missiles and the continued threat posed by ICBMs. And obviously, we have to think about balloons now too. But in your view, how have these evolving threats complicated our ability to meet future requirements?

[00:03:02] **Lt. Gen. DeAnna Burt:** No, that's a great question, Gus. As we talked about, I think, the enemy says 2007 the Chinese did their first ASAT test. And so again, when we talk about our missile warning, missile tracking capabilities, it's how is our ability to take one of those anti-satellite capabilities and track it from launch to what is its potential target. And then getting to General Miller's point of protect and defend, what am I going to do to make myself a hard target or try to evade that missile and endgame? So those are the criticalities. They saw that with the Chinese in 2007, even more scary to me is the 20 July 2020 launch, '21 launch of their first fractional orbital launch vehicle, which starts out as an ICBM and then maneuvered in endgame as a hyper glide vehicle which what that means to me and what should matter to all of you is that it can now maneuver around certain detection capabilities. So I think General Miller also pointed out very clearly that where sensors are now really start to matter, and they matter on the ground and they matter in the domain to be able to get after this.

The Secretary of the Air Force recognizes this. We've been working hard. If you have not heard of the Secretary's Seven Operational Imperatives I think it is very telling that his operational imperative number one is building resilient space capabilities. And under that operational imperative, we've been working, and you saw the Tranche 0 launch on Sunday, the beginning of what is missile warning, missile track, and how do we get to, as General Saltzman mentioned, disaggregated or deny that first mover advantage by having a resilient architecture and proliferate LEO, MEO, and GEO to get after that missile warning, missile track capability, which is directly related to that discussion of the Chinese capability.

So it's important that we continue to keep modernizing our capabilities. I thought it was very interesting some of the discussions. General Miller was harping me, as his former instructor, but telling me now it's a service. In the COCOM, there's always a natural tension. I have been, had the opportunity now

as the COO to sit in to ops tanks regularly and then leading into tech ops steps leading into tanks with the CSO. And it's always interesting to see the natural tension, as there should be, between services who are force providers and worried about risk to force and how I modernize to meet the threat that we're talking about, but also from the COCOM perspective. As General Miller clearly articulated, they care about fight tonight and about two years out, and then their care is gone. Because that's the extent of that commander's typical tour when they're gonna fight. There's always a natural tension between risk to force, risk to mission, and how you balance modernizing and taking capabilities down, and being able to execute in support of the COCOM.

I think through the Secretary's OI as we start to deliver missile warning, missile track, we use that Space Development Agency example an exemplar moving forward for how we continue to build more resiliency across our entire enterprise not just the missile warning, missile track, are going to be where we need to head for the future.

[00:05:46] **Lt Gen Guastella, USAF (Ret.):** Great. Those are great insights. Thanks. Hey-

[00:05:47] **Ed Zoiss:** Hey, General Burt, can I-

[00:05:49] **Lt Gen Guastella, USAF (Ret.):** Yeah. Yeah.

[00:05:49] **Ed Zoiss:** ... add on to that?

[00:05:49] **Lt Gen Guastella, USAF (Ret.):** Yeah, please do.

[00:05:50] **Ed Zoiss:** Yeah. I remember being in an industry event, right after that test happened. And I would say many of us were probably... It's a very similar industry events. Clearly it was a buzz and it changed everything. As we, between industry and the government, we're on this journey for resilient responsive systems, I think at that point, it absolutely crystallized that the systems we have today are necessary but they're inadequate to really counter this new threat. This new threat really has changed the game and changed the game in so many ways. Ballistic threats, as they are, you know where the endpoint is based on, where they launch from and their trajectory. This new maneuverable system is a real problem, a real concern, especially when you think about our maritime forces, and how these hyper glide vehicles can maneuver around our radar systems. This is a big problem.

It really... I sit from an industry perspective and government, again, crystallized where we need to go today. From L3Harris's perspective, we have 40 satellites under contract right now. Half of them, fully half of them are slated for this new architecture, this new resilient architecture with SDA. It is a national imperative that we field this architecture is quickly as we can to make sure that we can keep custody of these vehicles. One vehicle launched. That was a demonstration. Imagine if it was 10 or 50 or 100. And now, you're trying to track these very cold bodies, these dim cold bodies dropping out of orbit, and tracking them and providing fire controls coordinates to our warfighters. That's the mission that, that, that industry and government is on, is to provide that type of solution. It's changed everything for us. It's changed the way-

[00:07:26] **Lt Gen Guastella, USAF (Ret.):** Yeah.

[00:07:26] **Ed Zoiss:** ... we conduct our R&D, the way we facilitize our organization and the way we think about the strut.

[00:07:31] **Lt Gen Guastella, USAF (Ret.):** Thank you. That's really good to hear from the industry side. Tim, I want to bring you into this because you are an experienced missile warning operator from back in the day. And so how do you see the change in this operating environment occurring?

[00:07:43] **Tim Ryan:** Absolutely. A- and both General Burt and Ed hit it right on the head. When I was operating, we've got some of the fellow folks that, that I operate with out in the crowd. It was all about ballistic missiles. DSP was not at the end of its 53-year run. A matter of fact, we were just bringing on the Heel Constellation right at the highly elliptical and we thought that at that point in time was game changing. Oh my gosh, we got all this data that we're gonna get now. It's completely different now. So you... The sensors have evolved. There's a ton of data that's being able to come through. The operators have so much better understanding of where they're at now, but they've got to get to the point of exactly their threats that Ed talked about. Oh, now it's maneuvering through. That is an absolute game changer. SDA's proliferation will be able to do that. We'll talk a little bit more, I'm sure, about how on the different planes you have to be able to have that to be able to track that all the way through. Because if not, you're never gonna get the fire control solution that, that you need from a tracking side.

[00:08:48] **Lt Gen Guastella, USAF (Ret.):** That's great. Thanks, Tim. Spice, back to you. We read in the news recently, a Space Force will be assuming responsibility from the Army, for the Joint Tactical Ground Stations, so JTAGS. It was great that we had a question before from our army officer in the room.

[00:09:01] **Lt. Gen. DeAnna Burt:** HooAH.

[00:09:01] **Lt Gen Guastella, USAF (Ret.):** And, [

[00:09:02] **Tim Ryan:** laughs].

[00:09:03] **Lt Gen Guastella, USAF (Ret.):** So JTAGS are the forward-deployed units that process and disseminate that missile warning that we were talking about to the warfighters and they re- and they support the regional combatant commands. What's the significance of this transition from the Army to the Space Force? And why is this a positive development?

[00:09:20] **Lt. Gen. DeAnna Burt:** Absolutely. I think what this brings is the whole missile warning family together. Whether it's strategic or theater, they are now in one house. And what that does are in one service. And what that means is when we start to modernize and accelerate on either side. the strategic or the theater, then we can balance both sides as we're bringing them up. Maybe we learn lessons in the theater side, which we do every day, of how to detect and look at things differently, using the weapon system, how those tactit- t- tactics and techniques shared with the strategic side, which, again, we know is the bell ringer for our nuclear systems. So how do we make sure that we're validating those tactics? And can they go back and forth? But we don't slow the innovation down in the work to the theater. We will take as long as a budget is signed and approved and appropriated. I want October of this year, we take that over, we'll work through the transition of the Guardians, or the Army personnel who would like to transfer, the billets transfer, the system and hardware transfer. And then it will be a discussion of what, of those operators I want to cross transfer into the Space Force.

JTAGS is important because it's directly in each of the combatant commands and integrating into the theater warning systems of the combatant commander. So these are the folks saying, "Duck and cover," when you're downrange, is the CFAC. These were the folks directly telling the CFAC-

[00:10:31] **Lt Gen Guastella, USAF (Ret.):** Yep.

[00:10:31] **Lt. Gen. DeAnna Burt:** ... "Hey, you have an inbound missile," not only for the passive mission to protect, but the active mission to then get the missile shooters looking and the defenders looking and then the attack operations. How do I go back and look for the high value target? It is that mobile launcher in the air domain, working directly with the CAOC to make those things happen. Having that theater element involved now tooth-to-tail

from acquisitions through all the operations, strategic and theater, will be important. We have these capabilities OCONUS in Italy, Japan, and Qatar, and Korea. We have one training site in Colorado Springs as well as Redstone Arsenal is where the depo is for the JTAGS vehicle. So all of that will be in the service and I look forward to seeing us continue to improve and build upon the capabilities already that the Army brings to the fight and that thought into the Space Force and warfighting and then how do we pair that with our strategic capabilities and get better at that moving forward.

[00:11:21] **Lt Gen Guastella, USAF (Ret.):** Absolutely. It's... You know what? Some of the Army Space warfighters are some of the best I've seen. So by the way, really glad to have those with the Space Force as well. Tim, over to you. The Space Force, as you mentioned before, provides critical missile warning from our satellites or in GEO and LEO, both. But was discussed earlier, they are big juicy targets. And recognizing this vulnerability Space Force is obviously moving towards more proliferated constellation in, in, in low Earth orbit. What will this look like for missile warning and tracking, especially when it comes to the defense in depth aspect?

[00:11:52] **Tim Ryan:** Yeah. I think that it's important to be able to understand what you don't want to do is just take GEO and shrink it down to LEO. We've alluded to with how SDA is doing they're force design, it's going to be across both LEO, MEO and GEO. General Miller talked about it earlier, about being able to take that calculus and really make it difficult for the enemy, whether it's not cost inducer for them to be able to take it out. It's too many to be able to have any effect. Now when you start to put them in LEO, MEO and GEO, now you've got to be able to not only worry about one, but you still have capability rather than taking out LEO if you start to destroy that orbit, which is a concern. That's a tightrope that the Space Force and Space Command has to walk every day of being able to say, "We want to be able to defend this domain," but understanding that you can't destroy the domain because then you destroy it for everyone. And so now being able to have that defense and depth, that's going to be able to give better capability, but also from a defense perspective.

[00:12:54] **Lt. Gen. DeAnna Burt:** I'm only gonna add, Gus, if I may-

[00:12:56] **Lt Gen Guastella, USAF (Ret.):** Yeah. Please.

[00:12:56] **Lt. Gen. DeAnna Burt:** ... that Tim is right on. But I hope intellectually we're having a conversation about what do ASATs now mean when our pacing threat, pacing challenge is putting just as much on orbit and pushing past us in some cases, bringing on capability. Is it in their interest to

debris up LEO? Or are they going to fratricide themselves and take away the capability that we've already said they need to fight the home game to keep the away team away into tip and cue their assets. This is starting to create a balance they are now just as dependent in cases as we are in their plan about how they're going to defend.

I'm not saying that... I'm not trying to discount the ASAT threat, but I also want us to think through what that means. And so it's not just the ASAT threat that defending in depth or having depth with missile warning, missile track and proliferative LEO. We all have the MEO and GEO layers. And now it's not as General Miller said, "Just six juicy targets." I have a whole lot of things I have to consider. You'll hear from our colleague today the amazing Dr. Tournear at lunchtime. He was quoted the other day as saying, "The missile now cost more than the satellites he's launching. So is the juice worth the squeeze? What is the cost-benefit to me? Is it worth me economically to try to take the capabilities out that way?"

So what I would say, I then expect that there will be other non-kinetic things: jamming, lazing, cyber in particular, because those are cheaper to do. And if I'm going to put more on orbit, then I would expect that the enemy's going to counter in those ways to be able to cost and post cost on us in a way that they can afford. We need to be shored up against all those capabilities as well.

[00:14:36] **Lt Gen Guastella, USAF (Ret.):** But it's nice to follow on that a little bit. As not only missile warning but other things may move to more proliferated enterprises does that change the way we do operations at all? Or would it, will it drive any organizational changes with your OT&E hat on?

[00:14:49] **Lt. Gen. DeAnna Burt:** I think you heard General Saltzman talk this morning about we're very much at the strategic level looking what is inherently governmental and what is not, and how do we divide as we look at new constellations coming. So if you talk to Dr. Tournear today. he will tell you that he is delivering the car, the keys, and the driver. So what does that mean? He's got contractor operators. So how do we come in with what is inherently governmental about what he is doing, and how do we oversight that mission set? Is that something that we would use as a model in other missions? So General Saltzman has us all evaluating and each of our mission sets if it's inherently governmental, then we need to look at is that a blue suit or is that a government civilian. And if it's a military blue suit, is that officer enlisted in? What is that ratio on the crew force?

The second side is if it's not governmental, then can it be automated? Is there machine learning? Is there artificial intelligence? Is it a contractor? And then how would we purchase that? Is it a service? Are we buying a wholesale commercial off-the-shelf capability? All those things. We are in deep discussions on how we separate that. So I think in the future, you will see us start to look at how we separate those two, how we resource them and how we organize around them. But right now, I'm in "fight tonight", I have to teach, we have to have operators prepared, as he said, be combat ready to deliver today. So as we work through these capabilities, getting the training on new systems, getting the live virtual constructive and training to be able the operators ready to fight with these constellations as they're delivered and working closely with the contractors on the training to do that.

[00:16:16] **Lt Gen Guastella, USAF (Ret.):** That's great. Ed many folks out there have termed the Space Development Agencies Acquisition path as disruptive. So as in... From the industry viewpoint what have you experienced during Trance 0 and Tranche 1? And how's this, has this changed how you think of the Space Force acquisitions? Can you give us some insights?

[00:16:32] **Ed Zoiss:** Look, I think that, it is disruptive and I think that industry welcomes it. In fact, L3Harris considers, ourselves a trusted disruptor. One of the things that he's done is he's really put, an emphasis on acquiring a capability, meaning the best sensor system and capability at really it, with the time domain, every two years. So when you start to look at prioritizing speed and the technical capability that you're delivering, you end up with a different solution. You end up with a solution that's not architected for 18 years service life. You end up with a solution that doesn't have the government customer living in our facility each and every day, approving every test document we do, approving every time we move this satellite from one station to the next. It ends up being a different model. And I think that, industry's embracing that model. I know L3Harris is embracing that model. We're embracing the investments that come with that.

We're also embracing the thought that there's now an ongoing marketplace, that it is not an existential procurement where there's one procurement and industry is all gathering around that single procurement, trying to figure out, if you're part of it or how you win. They'll be ongoing procurements. They'll occur every two years. And so from our perspective, we're facilitizing that. We're building a new space satellite integration facility. We're expanding our facilities. We're being very wise on where we choose to invest, in algorithms, in processing, to make sure that we have the most capable system. Because that, we heard the chief said that the threats are changing. That they're changing each and every

year. And we can't be designing our systems to last for 10 years because it's irrelevant. Because we know the threats are changing, they need to be software upgradable and we need to be, is it industry on two-year centers? And I think what he's doing is absolutely required. We need to operate at the pace of the threat, and I think we're on that path today.

[00:18:27] **Lt. Gen. DeAnna Burt:** Because if I may I-

[00:18:28] **Ed Zoiss:** Yeah.

[00:18:28] **Lt. Gen. DeAnna Burt:** ... I'm gonna use that, trusted disruptor.

[00:18:30] **Ed Zoiss:** That's not gonna-

[00:18:31] **Lt. Gen. DeAnna Burt:** When General Saltzman's not happy with me, I'm gonna use that term. I'm a trusted disruptor.

[00:18:33] **Ed Zoiss:** [laughs].

[00:18:33] **Lt. Gen. DeAnna Burt:** I think Ed brings up an incredibly important point that I hope all of you here and that, again, it's about... We have to change culturally, as we, the blue suiters, that it's not going to be perfect. And we've heard all of us say to you and I'll say it again, we cannot let perfect be the enemy of good. And how do we get to a 75% solution is good enough and get into a Dev Sec Ops organization where we're iterating on software together and we're working shoulder to shoulder, acquisition and operator. You heard General Saltzman talk this morning about the 15th Space Surveillance Squadron on Maui, that's in a ground-based sensing capability working with AFRL and they're sitting side by side and they're quickly able to take AFRL technology and rapidly normalize that.

We see this same advantage happening with the Space Development Agency. And how can we quickly iterate and work if they in fact deliver as promised? And Dr. Tournear will talk through this today. At every 18 months, new capability. That's impressive. That's hard for the enemy to turn inside of and they're voting every day. Now, if everything is software-enabled, from the ground system to the satellite to the receiver to the crypto, and can all be rel- reprogrammable and user-defined, that, i- that's a loop that is very hard to break into. An OODA loop. So I think that's important that we all recognize perfect cannot be the enemy of good. We have to get to software-defined and user-enabled at every echelon of our business.

[00:19:58] **Lt Gen Guastella, USAF (Ret.):** Excellent. So the next question is something that's near and dear to my heart, as someone who absorbed 11 Iranian ballistic missiles into one of our bases in the Middle East. The Space Force, we talked about the missile warning piece but I already knew, alluded to this space. What... Can you talk to us all about what the services also doing in terms of providing information data to the Missile Defense Agency and the enterprise is trying to get after some of these bigger threats?

[00:20:25] **Lt. Gen. DeAnna Burt:** No. Absolutely, yes. Overall, as I said earlier OPIR our overhead persistent infrared, is the bell ringer, gets us started depending on the launch and capability. Then you have the radar capabilities that we've been modernizing Clear, Cavalier and Cod over the years to be direct inject into the missile defense architecture. So that is now a machine connection from the radar to the shooter. As we talk about this kill chain, sensor to shooter, how are we directly impacting into MDA systems? I think it has continued to prove improve over the last five years and we will continue to do so as we start to look at the Space Force will fly the long-range discrimination radar out of Alaska on behalf of MDA. And that will get us to more mid-course updates on missile flights, particularly from INDOPACOM, when we talk about North Korea, China, Russia and from the Pacific. Giving them directly those updates machine, and machine is going to be critical to then get to that kill chain of a defensive capability, being able to shoot down those incoming missiles before they hit the homeland.

I think the more and more we integrate, and this gets to the discussion earlier that Stacy had, data is great. But if the data can't be quickly put together and processed in a way to a decision maker to execute it's useless. And in this case we're working really hard to connect all of our assets into that kill chain with the Missile Defense Agency in order to defend the nation.

[00:21:39] **Gus:** Excellent. Thank you. To borrow from General Deptula's comments before that, this whole aspect, this defensive piece is going to need resources. Because we're departing from 20 years of land-centric campaigns where US forces live on bases that are basically sanctuaries, to where countries are threatening us at every area of the battle space. And missile defense, cruise missile defense hypersonic Defense is front and center in the discussion here. And it's good to see the Space Force actively engaged. So Ed, back to you. There's... L3Harris have been doing some great work developing the next generation sensors needed for this architecture. Can you talk at all about the hypersonics and ballistic tracking sensor? How it's going to contribute to this this kind of architecture?

[00:22:19] **Ed Zoiss:** Sure. The sensor is part of the MDA architecture and working very closely with the SDA. It will be the advanced sensor that we'll use for missile tracking. Maybe I'll step back and let's paint a quick picture of, the challenge and if you were a sensor, what you'd have to do to actually, track this threat. There's a launch. Clearly we have systems that can detect the launch. The burn is finished. Now there's a body that's gliding. It's either endo-atmospheric at the high end of the atmosphere, it's gone exo-atmospheric.

And there's just not one, but there's a raid, there's dozens. So now the goal of this new architecture that we're putting in place is looking down at the earth, which is an incredibly cluttered background that has high luminosity and the dark places, and picking out these objects that are moving at a hypersonic speed and they're incredibly dim. So you're looking for very dim objects. How dim? On the order of a light bulb against the background of a million light bulbs that keeps changing. And not only do you have to track these, you have to have custody of them at all times because they're maneuverable now. You also have to be able to provide the fire control coordinates to them. Because oftentimes, it's these entities, these, we'll call them "Rods from God", drop out of orbit and decide to go to their target. They're going to maneuver around our current radar systems.

And so this new space-based layer has to provide the fire control coordinates down to our warfighters. That doesn't mean that we're ingesting a picture, but we're ingesting the whole scene simultaneously. We're processing it on orbit and then we're providing fire control coordinates continuously down to the warfighter. So as these vehicles move, these hyper glide vehicles move and change, an interceptor can come up and get them. So that's the challenge. So that's what SDA and MDA are working collaboratively on. And I'm proud to say L3Harris is part of the solution. So we're very excited about it.

[00:24:17] **Lt Gen Guastella, USAF (Ret.):** Excellent. Thank you, Ed. Spice, back to you. I want to change it up a little bit and look at it from another perspective. And that's something that's so important to anybody in uniform and that's our training. And we know that the Space Force budget clearly prioritizes training. We heard that from General Saltzman before. Can you share with us how you're evolving any practices to ensure your guardians are thinking to the future fight and giving them those tools?

[00:24:38] **Lt. Gen. DeAnna Burt:** No, absolutely, Gus. There is no one in here who's grown up in any service that all the other warfighting domains have test ranges and they have training ranges, whether it's Fort hood, it's in Ellis the Space Force needs the same. So how do we get to what I am responsible for as

the COO under General Saltzman's are the Space Forces LOE number one, which is delivering combat-ready forces, is that orbital test and training infrastructure, OTTI. How do we deliver that infrastructure?

And part of that infrastructure includes the National Space Test and Training Complex. So all of that comes together to say, "How would I put guardians in a training scenario, either live, virtual, or constructive, and allow them to fight and validate their tactics against a thinking adversary? How can I do that? Thinking about a joint force, large force employment. Or how do I do that in an individual weapons system? How do I train as an individual and how would I train as a crew? And how would I train with other disparate units that we're going to have to talk with each other to de-conflict our actions and work and timing?"

The range has to entail all of that, as it does in every other domain. The keys here will be, I think, General Saltzman has talked very def- heavily about we experience our domain virtually. We as the Space Force do not get to touch, feel or see the threats in our domain. Unless you're an astronaut on the ISS you're not in the domain physically to sense it. So we do that digitally. So virtual training and, is going to be important, and war gaming, in how do we do that? General Saltzman also mentioned the Sky series, the space flags. We've talked about Schriever Wargame. All of those will be enabled by this operational test and training infrastructure.

So right now we have a vision statement that was signed by General Thompson last year. We're working now with all of our partners to include STARCOM, who will eventually be the lead in executing the Nellis, or the National Space Test and Training Center. They will work with us. We're working on the strategy document and the requirements of what all is entailed. But what I would ask each of you is deliver weapons systems. We are doing some things now and capabilities just like Space Development Agency is delivering this whole missile warning, missile track. This is first of kind that we've flown a proliferated LEO. How are we going to do that? Do we have the trainer that's going to prepare the operators to deliver those combat-ready forces? Are they ready to take that on when Dr. Tournear turns over the keys? Now he's saying he's going to give us the driver too. That's great.

But the operators, the military oversight, what is inherently governmental is gonna have to understand that system and have trained with those contractors in order to effectively declare that system initial operational capability and then force present that to the combatant command. The OTTI elements are important. You also heard General Saltzman talk about amplifying the Guardian

ideal or the Guardian spirit. How do I teach mission command? You do that on your test ranges and your ability to let people learn to be different force leaders and force element leaders, give them the chance to make decisions. We would like to see them fail forward, learn, fail forward, keep going and learning, because that's where they're going to learn and accelerate our capabilities and validate our tactics. At the heart of LOE 1 for the Space Force is really delivering on that operational test and training infrastructure.

[00:27:43] **Lt Gen Guastella, USAF (Ret.):** That's great to hear. I'd like maybe, initially to Tim, but then I'd love to hear your comments at the end and this is something that's important to me also, is that the Space Force recently stood up several Space Force component commands throughout our combatant commands. We have the US, in Central Command, there's one, and US Indo Pacific Command and US Forces Korea. Tim, talk to us about how these are being integrated into the command and how that, the missile warning aspect is is affected by this.

[00:28:11] **Tim Ryan:** I think that it's, we just had Col. Putnam from CENTCOM over and discussing our building a couple weeks ago and laid out what they're doing. They are completely integrated, utilizing, the way he's laid out that structure. They're integrated into the planning pieces. They're integrated in the, into the combatant commander's planning cycle, as well as having a seat at the table when the commander's actually designing or having a discussion, has a problem, right? I have a problem, it needs to be solved. Now, you have all your components there. The precursor to that back when you were at the CAOC was you had a DS4, and you had a small staff. And, but if you didn't know to go-to them to solve a problem, they wouldn't necessarily, at least when I was in the CAOC-

[00:28:57] **Lt Gen Guastella, USAF (Ret.):** We were not at the table.

[00:28:58] **Tim Ryan:** ... we weren't at the table. And that has radically changed. When you look at and utilize INDOPACOM, we talked about JTAGS being able to come over to Space Force, and budget gets signed, everything goes right, it's watch over. This is something that, in my opinion, the Space Force doesn't get nearly as much credit for how well they have been able to do. These transfers in that we sought in the SATCOM community. General Burt alluded to it, 100% correct. Now all the missile warning community will be under one. Not only in the three and a half years did the Space Force stand up the first service since 1947. They also took on a large load of inter service transfers. That's no easy task, right? You have to be able to get out to where they're at, be able to explain to sailors, soldiers, marines that have come over

what it means to be a guardian with all the questions that they're going to have. And so that's a totally different element set as well. It needs to be on that.

But when you look at JTAGS now sitting it into PACOM, you've got the combatant commander out there as well. They can reach out and go right to that unit through these these combatant commanders.

[00:30:09] **Lt. Gen. DeAnna Burt:** No I agree everything Tim said. I think this is a, the evolution of normalizing as a service and delivering as we've talked about as our goal with, under the CSO2. Every service presents service components to combatant commanders in order to present forces to be part of the planning and to deal with that service's very specific mission and business and talk to those threats in each of the COCOMs. We intentionally rolled out INDOPACOM, USFK and CENTCOM first because of, A, the sizes of their space force staffs because that became the nucleus that we then built upon to build that service component. As I mentioned in the earlier discussion about State Department, you now have a permanent Space Force presence in each of the combatant commands to do security assistance and security cooperation and talk space with our other coalition and Allied partners and start to build more of that by being at the table in all of those meetings with a combatant commands in each of the theaters.

EUCOM is on the horizon. We're working hard with them to be the next step to sign. I can tell you that General Miller mentioned it earlier, the very tight relationship between space, cyber and soft. So both CYBERCOM and SOCOM are very quickly behind and interested as well. So we're working through the mission analysis of what those look like. But I would say the key concern we have is how much growth can we do. Because I can't grow to the point that I can't execute. And I want to make sure that we have the right resources, we're giving them the right personnel, we have all the right players in the right places to do the mission. So as Ed mentioned or, I'm sorry, Tim mentioned we basically changed the engine out in the car while we're driving down the road.

[00:31:47] **Lt Gen Guastella, USAF (Ret.):** [laughs].

[00:31:48] **Lt. Gen. DeAnna Burt:** And we built a new car, but we had to keep driving. And we had to keep delivering space capabilities because the entire joint force and our way of life depends upon it. We continue to do that today. I think they th- add, adding these components is now taking us to the next level to deepen that relationship with each of the combatant commands personally and get after their specific problems or challenges in each other AORs.

[00:32:09] **Lt Gen Guastella, USAF (Ret.):** Thanks, Spice D. Wh- what strikes me is that with this component C, for the Space Force operators are out there that, that are involved in those Space Force components, that is your ultimate learning area for jointness.

[00:32:21] **Lt. Gen. DeAnna Burt:** Yes, sir.

[00:32:22] **Lt Gen Guastella, USAF (Ret.):** Because you're integrating with the Army and the Navy and the Marines, and you're there as an equal person at the table and you're learning about them so that those Space Force operators that are there in those space components can later be joint force leaders. Is that something that I think we're gonna see, hopefully, much sooner than my lifetime, but sooner than later. Okay, let's do some Q&A now with the processes as before. If we could raise your hand, we'll get the mic to you. Please identify who you are as we go around. All right.

[00:33:03] **Jackie Schmoll:** Jackie Schmoll with Raytheon Technologies.

[00:33:05] **Lt Gen Guastella, USAF (Ret.):** Hey, Jackie.

[00:33:05] **Jackie Schmoll:** Thank you for the panel. This question's for General Burt, and it's a little related to last panel but also this one. You mentioned using Allied partners and, our international partners to really manage the threat environment. How do we move forward in maybe more of an FMS opportunity? Right now there are allies asking us for capabilities and it's hard to understand the go-to-market with some of those countries.

[00:33:29] **Lt. Gen. DeAnna Burt:** No, absolutely, that's a great question, Jackie. We have been working very closely, and always have been with a variety of commercial coalition partners and where they are in their journey, as General Miller mentioned, whether they've stood up a command that's combined air and space or if they've set up their own space command equivalent to US Space Command within their nations and what they are wanting to pursue. So again, it has to be a two-way street. I'm with you, and I think FMS is an important part of security cooperation and engagement. And then again I think the service components that we've stood up particularly in INDOPACOM, and soon to be, hopefully, EUCOM, will help us with our partners to start working those processes and capabilities. We have engaged with SAF/IA. General Saltzman has given really direct information to Ms. Seybolt and her team on what the priorities are. We're trying to match that up with the strategy that US Space Command in general is looking at, so that those are nested. But

those dialogues are ongoing. The nations are absolutely on board and interested of where they can help and what capabilities they already have.

I want you to think when we say partner to win, it's not just about me or the United States selling things to other nations. It's also is there something we could purchase from them. So think the wedge tail on the air side, that's very similar concept, great capability that we needed. And so we purchase. So it's a two-way partnership here in the space domain. What can we provide to them in sales? What would they give back to us? And then how do we, every day, fight tonight, keep, continue to share data and break down the barriers to actually share the space picture, connect our centers together? So today, the CSpOC, the Combined Space Operations Center of Vandenberg talks to the United Kingdom's Space Operation Center, the Australian Space Operations Center, and the Canadian Operations, Space Operations Center. So we're already talking and sharing at the level and we're working now with the NATO Space Operations Centers. We work in support of EUCOM and Ukraine.

So all of those things, the dialogues, the data sharing, the space domain awareness agreements, the space situational awareness sharing agreements, all are happening now. It's how do we take to the next step of actually selling and exchanging hardware between the nations or software capabilities. And I think we're on the cusp of that, but I don't want to get ahead of SAF/IA in where we are. But no, we're trying to nest with the strategy of engagement with US Space Command as well.

[00:35:47] **Col. Pete Atkinson:** Here. I'm Colonel, Col. Pete Atkinson, headquarters, Department of the Army. A quick question. You mentioned presentation of forces. We talked about the regional bank events. What's the division of labor between Space Force and Space Command with presentation of forces, what that looks like, and then what are the different roles and responsibilities different before? We had a COCOM in a service so aligned. What does that look like when you present to, say, INDOPACOM or some other combat commands?

[00:36:14] **Lt. Gen. DeAnna Burt:** That's a great question, Pete. One of the things that I'm learning very quickly in the building is the whole gift map process, which is the joint staff process about how we allocate and assign forces to each of the joint forces or the COCOMs. And Gus has lived this as the three for the Air Force. When you sit in ops steps and that, that whole tension, as I said earlier, about risk to mission and risk to force very different struggles. Risk to force is I'm trying to modernize, I'm trying to keep moving things forward. Risk to mission is more where the COCOM is.

In this case, now that we've stood up the Space Force, we have a responsibility to modernize organized training equipment build. It's not that the Air Force didn't have that previously. But now as you stood up a singular service, how are we going to look at those capabilities and modernize them? And wholly in a benign environment, we presented everything to US Space Command. And I think we're starting to realize now as we do that, we're not giving ourselves any room to do advanced training, to do maintenance a lot of things that are now hamstringing us to modernize and get, lower that risk to force. So that's going to be important moving forward of how we work through the directed readiness tables. The forced presentation, what's assigned and not assigned to US Space Command. Now you add, as you mentioned, Pete, the service components, what are going to be assigned to INDOPACOM as the service component, for example. What are we going to say that we are forced presenting to them and in what readiness table and at what rate are they going to have certain capabilities that are deployed in there, in their AOR? So those are all things we're working through right now.

As that's a cyclical process that goes annually. So sometimes I'm jumping on the merry-go-round with products that were built last year, but we're trying to force the conversation and work through it. Our US Space Command partners, as General Saltzman said earlier, that is our key combatant command to focus on because largely that's where most of our capabilities today are presented. As we move forward, we'll see if that changes and how that evolves. But we also have to be, as we stand up the service components, beholdened to how we're going to present to each of the COCOMs as well in that process.

[00:38:23] **Col. Pete Atkinson:** Thank you. Yeah.

[00:38:24] **Elliot Killick:** Thank you. Elliot Killick, Slingshot Aerospace. You mentioned the role of the NSCTC and the role that, that plays, not necessarily missile warning but in terms of thinking through how we go to fight. How important is the role of the NSCTC in, in making sure that we're ready to be resilient and fight by 2026? And do you think that progress that's been made on the NSCDC complex so far is sufficient to get to where we need to be from from your perspective. Thank you.

[00:38:49] **Lt. Gen. DeAnna Burt:** That's a great question and that I'd give Gus if he has any thoughts on this, too, because he's seen this from the air side as well. As we grew up as Air Force officers... I spent 20 years of my career in the Air Force. I grew up on the Nellis Range and I had the privilege to be stationed there multiple times, both as a student and instructor, and then back as the Warfare Center Vice Commander. I've seen the capabilities that we have

historically brought to bear as Air Force Space Command in order to replicate the threats, to the space domain, to the rest of the joint force. So thank GPS jamming, SATCOM jamming. All of those kinds of capabilities we have brought to the Nellis Range and have lived there for a very long time. And large force employment exercises to show these guys what it would be like to be in that contested environment.

Now we also have to honor that there's a threat that's extended into our domain. And how are we going to train operators, one? We talked earlier about, I think Stacey also mentioned, the inherent right of self-defense and how does she, as a commercial company, start to look at her own self-defense? How do we do that, too? How do we teach operators how to make themselves a hard target and what's unique about their platform? And I can say this now. Sometimes I used to say this word in youngsters looking at me "What is she talking about?" We're gonna have to MacGyver them in some way.

[00:39:59] **Lt Gen Guastella, USAF (Ret.):** [laughs].

[00:39:59] **Lt. Gen. DeAnna Burt:** It came back as a Friday show. And so then it worked for me.

[00:40:02] **Lt Gen Guastella, USAF (Ret.):** [laughs].

[00:40:02] **Lt. Gen. DeAnna Burt:** but we have to MacGyver and ring every taxpayer dollar out of the capabilities and think about fighting differently. There are capabilities. This is no different than any other domain, that their capability's flying long past their design lives and doing missions. Look at the B-52 doing missions we never thought that, it was never built for that, and it's doing CAS. There's things that can be done, depending on the environment. What is the threat that's posed to you? And what can you do with your system? So that's number one, what we have to teach our operators how to do on the training complex. And I think that's the part we have to build to. How much of that can we do live sky? And that gets to Pete's question of how much is force presented to the combatant command, and is there any capability that I would retain on orbit that would allow us to do that tactics, techniques, development and validation with our own assets, our blue assets to do that.

But also, do I have the test resources that are threat-replicating or the threat replication on orbit? So we've had aggressors that do the terrestrial to space. How do I get on-orbit threat replication. And What do those look like? We need to do a lot of work there. How much live sky will we get to do versus how much will have to be virtual and constructive? We've talked a lot in the past about the

things that we do on orbit are very sensitive and could be perishable. So again, we don't always want to show that. That's no different than the F-35. Pick another high-end system. There are certain things we don't do live until it's time to kick the door in. The same thing holds here. But we do need to build the infrastructure, so when we do need to do live we are able to do it. The virtual and constructive, as I mentioned, you guys are delivering. We just got to deliver it faster as we give the first instantiation the system to be able to train the operators.

Lastly, I would say, a lot of times we get very focused on space operators. It's not just about space operators flying the satellite. It's also the intel support to that weapon system and how we're talking about the threat and the cyber threats. Do we have our cyber operators defending the infrastructure on that operational test and training infrastructure? is their mechanism for them to also practice their capabilities with their defensive tools? All those things have to play because we come as a combat squadron and a combat delta in our force presentation to the combatant command.

So all of that has to get implemented in the National Space Test and Training Center. So ultimate to your point, bottom line, are we there? I would say we're about halfway, but we have a whole lot of work to do that we're going to need everyone in this room's help getting after the live piece of this, the on-orbit threat piece of this, how we would best put together an infrastructure. That would allow us to fully play from tooth to tail a fight if it were to extend into space.

[00:42:32] **Lt Gen Guastella, USAF (Ret.):** All right. Thank you. We are at... We can keep going up here, but we're at the end of our time. And I just want to thank all of our panelists here for their insights, certainly from our operators, from you or from our industry side and, and Spice just to you, it's really good having a Space Force warfighter and ops steps with your voice and your perspective to argue a lo- a lot of times with the Air Force on some really critical issues. Having your voice and your service there at that table, I think it's gonna help change our nation for the better. Ladies and gentlemen, a round of applause for our panelists here. Thank you.