Space Order of Battle

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Gen. Kevin P. Chilton, USAF (Ret.):

Thank you. Good morning everyone.

Well, I'm an old retired guy now, but I can tell you I keep track of what's going on in space and things have changed dramatically since I retired in 2011. The biggest change is our adversaries. China, Russia have increased their counter space capabilities, both with direct-descent anti-satellite weapons, on-orbit capabilities, ground-based capabilities to include jammers and ground-based lasers that both may someday migrate to space. But all of these things have compelled us to do things differently, not only to stand up the Space Force, but to start thinking about how we're going to counter defensively and offensively these capabilities that our adversaries present and also demands that we update our order of battle. And that's what our panel is about today. How we train, how we conduct operations, what hardware and capabilities we need to buy to be successful in the domain. And so I'm honored to be joined by a great panel today of space experts and great space leaders.

Next to me is General Greg Gagnon, the Deputy Chief of Space Operations for Intelligence for the entire Space Force. Welcome. Next to General Gagnon. Yeah, let's hear it. No small job. No small job.

The next individual is, I think, one of the busiest people in the Pentagon because of the number of jobs she has. Lieutenant General DeAnna Burt, the Deputy Chief of Space Operations for Operations, Cyber and Nuclear. Welcome.

And last but not least, we have Lieutenant Colonel Doug Schiess. And now he's the one smiling up here because everyone else is doing staff work, he's a commander. Not of just one command, two commands. So General Schiess is the commander of U.S., I'm sorry. Commander of U.S. Space Forces Space and Commander of U.S. Space Command's Combined Joint Force Space Component.

So welcome to you all and let's just jump into what compels us. So General Gagnan, I want to start with you with your Intel expertise. What's going on that's got us so worried in space these days?

Maj. Gen. Gregory J. Gagnon:

Well, it's great to have the opportunity to talk to such a large group of folks both here and online. And let me re-emphasize a few points. China, China, China, our Space Force is four years old. Their Space Force is older. Their Space force is in third grade. When they started their Space force was about December 2015. Where were you in 2015. And from 2015 to today, they've increased their on-orbit assets 500%. They now have over 900 satellites in outer space.

And you might say that 900 is a big number. You may say 900 is not a big number because you look at SpaceX and you see the things that our commercial industry are doing. But in the United States, for the 9,000 satellites that the US has up there, 70% of them are communication satellites or broadband satellites. We put satellites in outer space to connect the world. Over half of the CCP's satellites in outer space are remote sensing for the last two years. They've put over 200 satellites on orbit each year and in each year over 100 of those were remote sensing satellites. Those remote sensing satellites are designed to find fix and track joint forces in the Western Pacific. In just my time in the Space Force, which is only three years, they have moved from good enough to almost just as good with their surveillance and reconnaissance capabilities in the Western Pacific. That is an important fact for all of us to understand. We have often deployed with space superiority because we could move to the A-Pod, we

could get on the plane, we could go to the central command. And we haven't done that logistics under threat that is now changed.

Gen. Kevin P. Chilton, USAF (Ret.):

That is a big difference. And it sounds like their focus is developing a capability that is specifically the space-based capabilities, specifically focused on countering the United States and the Western Pacific.

Maj. Gen. Gregory J. Gagnon:

That is accurate, sir. I would say for their space force, there's two main mission areas. One is to try to take out Doug Schiess and his forces in space so that they can remove our ability to fuel the joint force. But the second part of it is to try to create the space capabilities that we have all grown accustomed to make us the most lethal military in the world.

Gen. Kevin P. Chilton, USAF (Ret.):

Thanks. General Schiess. I'm sure you have a view on this as well because you're the operational commander and I'm sure you don't discount the Russians as well. So could you talk a little, if you want to expand on the China threat please, but could you, Russia, North Korea is now becoming space-faring with their satellites. Go ahead.

Lt. Gen. Douglas A. Schiess:

General Chilton, thanks. Thanks for doing this too. It's a pleasure to be on the panel, especially with these friends of mine too. But sir, thanks for your leadership in the space community as well.

And as you said it, so I'm going to repeat it. I have the best three-star job in the United States Space Force right now at being the commander of US Space Force of space, and getting to be General Whiting's CJFSCC, his Combined Joint Force Space Component Commander. And so yes, we think about this on a regular basis. And we have great partnership with Greg Gagnon there at Space Force S2, and Sid Sidari at Space Command.

But yes sir, the Chinese are obviously challenging, are a pacing challenge. We think about that on a regular basis. You talked about some of the things here, but they have demonstrated, in 2007 they demonstrated a direct-descent, anti-satellite missile, took out one of their own satellites, created debris that still causes problems today. They have a satellite that they have demonstrated can go to another satellite, grapple that satellite and take it to a graveyard. They've talked about that being done for cleaning up debris, but they could do that to a United States or one of our ally satellites as well. They have jammers, they have lasers, they have a million other things out there that are going after, as General Gagnon said, our ability to do our mission to deliver what we need to do for the joint force, so very concerning.

But you are correct, Russia also has a capability. They also have a direct-descent, anti-satellite that they caused thousands of pieces of debris as well. As a matter of fact, we had to tell the International Space Station to take cover during that time when there was cosmonauts on that platform as well. And so they put their own people at risk when they did that. They also have lasers, they also have jammers. They have a satellite out there that's gotten close to one of our satellites and they have some exercises they're doing with nesting doll-type satellites. So I'm concerned about that. And as you said, North Korea, others, this is the domain that people are now concerned about. It is no longer this benign domain. I'm not sure it ever really was, but we have to be prepared to all those threats. And I just want to say, I'm excited about what the Guardians are doing to get after this threat because they know that

this is what is going to be the thing that keeps us having the same way of life that we have every day and that these people can't take that away from us.

Gen. Kevin P. Chilton, USAF (Ret.):

Our Guardians are certainly are not-So-secret weapon.

Lt. Gen. Douglas A. Schiess:

That's right. Yes, sir.

Gen. Kevin P. Chilton, USAF (Ret.):

They're fantastic. That's great. I agree with you. Well, so to counter these offensive capabilities, our adversaries have developed, we recognize that we only had a few satellites up there. And that perhaps it would be better to have more, in other words, spread the targets set out. And so we started a proliferation concept.

So General Burt, I think people understand what we're doing in that regard, but is there other advantages besides resilience to having a proliferated constellation?

Lt. Gen. DeAnna M. Burt:

Thank you, sir. I appreciate the time and Mitchell Institute and being here with this team. My brothers in arms, always good to be here and work with them every day and what we do. I want to reiterate something that you've heard General Saltzman talk about, and he alluded to this morning, our theory of success competitive endurance. And why I talk about this is there are three pillars to it. The first is exquisite space domain awareness. How do we have the foundational intelligence that General Gagnon and his team and across the U.S. Space Command intelligence community provide in the domain, to understand attribution and when bad behaviors happen and what the intent are of different capabilities.

The second is that resiliency piece. Can we take a punch and continue to fight through it? And third, if required, do we have options we can present to the National Command Authority to do responsible counter space campaigning? So all three of those are really important and what we've built on in the last year since General Saltzman has taken the seat as a team to get after is our theory of success.

So sir, to your question, I wanted to give that kind of foundation because when you talk about proliferated constellations and you talk about diversifying, so having missile warning, missile track in different orbits, both HEO, GEO and now MEO, I think that's important because you make the targeting solution for the enemy harder. You impose cost upon them to have more capability and magazine depth to try to take that capability away from the joint force. So that all goes into that resiliency piece to be able to take a punch. But we also know that by diversifying constellations in different orbits, you get different capabilities. We've seen it with intelligence and surveillance and reconnaissance. Being in different altitudes and orbit regimes, you get different capabilities, broad area coverage versus very precise images. So there's advantages to mission, but there's also to that resiliency as part of our theory of success.

Gen. Kevin P. Chilton, USAF (Ret.):

You increase revisit rates too.

Lt. Gen. DeAnna M. Burt:

Yes sir.

Gen. Kevin P. Chilton, USAF (Ret.):

And so you actually can become a global sensor in LEO where GEO's just got that one steering position. We also talked about disaggregation. So wanted to take away the ability for the adversary to hit one satellite and take out three separate capabilities, and one of those areas has been a missile warning. So we've read where we're going to have LEO and of course we still have GEO, but MEO is a new piece of that. Can you tell us why MEO was brought into the discussion?

Lt. Gen. DeAnna M. Burt:

Yes, sir. And as we talked about, by disaggregation, again, you forced them the cost you impose upon them to be able to target and take out an entire capability. When we had our previous structures with very high value assets, General Saltzman talked this morning about the Merchant Marine, we'd have significant single high value assets that provided that missile warning capability. So taking out one or two, you really could cripple our capabilities and be able to provide that to the joint force. Now that you get to disaggregation, multiple orbital regimes, you make that target set problem harder for them, and also allow us to gracefully decline, if we were to take and absorb a hit.

Gen. Kevin P. Chilton, USAF (Ret.):

General Gagnon, what are the threats in MEO that we worry about? Are they similar?

Maj. Gen. Gregory J. Gagnon:

The threats in MEO, it depends on the weapon system. So the important thing to note when you think about the PLA is that they're exploiting both the ability to get to space from the ground with threats, such as the direct ascent ASAT that we talk about quite frequently, but also with high-powered lasers. In orbit, they also have quite frankly, shown and demonstrated their ability to weaponize space. They did that as Doug pointed out with their SJ-XI about two years ago, and that was the satellite that did that capture of a defunct satellite for them and then pushed it out to the geo orbit.

There is a concerted effort. If you were in Beijing and you were sitting in a conference room, about thinking about a diversification of their weapons and how each one has particular targets, they're a thinking adversary, just like we're a thinking adversary.So diversification across regimes is important because it complicates the equation. But one of the key things we're trying to do is disincentivize first mover advantage, and those are the larger sub-pieces that General Burt talked about that you highlighted. Disaggregation, diversification, proliferation. What we're trying to do is not give them the opportunity for a knockout punch, because if they cannot get the knockout punch, they will not gain information superiority. In their warfare doctrine, information superiority is a prerequisite to other domain superiority. Think information superiority, followed by localized air superiority, then unlocking the surface combatants, both maritime and ground. That is sort of the thought process inside the doctrine. If you can prevent step one, maybe you prevent step two from ever even starting.

Gen. Kevin P. Chilton, USAF (Ret.):

Thanks. VICTUS NOX. General bur, we talked about this recently. I wish you could share with the crowd the importance of having demonstrated that capability one time, but there's going to be follow-ons. But also, we have the X-37, which is a very flexible reusable spacecraft. Maybe also if you could hit on why you think these are so important to the future force.

Lt. Gen. DeAnna M. Burt:

No, I agree. VICTUS NOX was a huge success and so kudos to the SSC team and industry that helped enable and make that happen. It shows we have to get after speed and it's delivering capability at the speed of aggression and wins needed. And how do we provide, in that part of that pillar three of responsible counter space campaigning, how do we provide capability to the combatant command, as well as to the national command, for decisions When counter-space capabilities or threats are launched into orbit, how would we respond? What are our response options in order to deal with those threats? And this capability, VICTUS NOX, showed that we could take, as General Saltzman said this morning, from the capability being delivered to the launch facility within five days up and operational. That's incredible. There are absolutely second and third order effects to all of our programs of how do we fill gaps or fill needs that the combatant commander would need from capabilities to support the joint force. But more importantly, it also allows us to act and respond very quickly to aggression if it happens at the time and place of our choosing and also create some of our own operational surprise to the adversary of what we are going to launch.

We also know as General Gagnon has very clearly articulated, the enemy gets to vote every day. And so even if we put capability on orbit to counter those threats, over time, those threats will evolve. So again, having this ability to quickly respond at speed and get a capability to counter a threat is critical because they are voting every day and the threats are continuing to change. So this is a very cost-effective way and rapid reaction capability for us to be able to respond to the combatant command. I also think we talk a lot about hardware and capability, but it also really went after a lot of process. General Saltzman alluded to this, how do we work with the FAA for clearances and range clearances? How do we work our processing on pads? Is there ways to do that quicker and more efficiently and to think outside the box? I think the team really evaluated all that. It's now how do we take that data, put it conceptually in a ConOps and how do we apply it across all of our mission sets and get faster everywhere, not just with the VICTUS NOX capabilities.

Gen. Kevin P. Chilton, USAF (Ret.):

Thank you. I reflect back on operationally responsive space, ORS, which was the first time we started thinking about this. And there were two great impediments. One was launch, you're going to have missiles ready to launch. We weren't doing that much of a launch and that ConOps was never flushed out. The other was to be able to quickly build a satellite or add a capability to orbit that wasn't in the ten-year design process.

Today we've got a lot of small companies that are very agile and we got hot production lines on satellites. And launch is becoming less and less of an issue with hot production lines in multiple contractors. So it seems to me that this tactically responsive space is something that could actually happen. And also, I think we make the mistake of thinking that everything's going to happen in three days. This could be a campaign. And if it's a campaign, we're going to have to reconstitute, we're going to have to put up new things. And General Schiess, your thoughts, because you're going to be the war fighter here.

Lt. Gen. Douglas A. Schiess:

Yes, sir. So thanks for that. I totally agree with General Burt and her comments on this. It gives the combatant commander and in this case the CJFSCC, the ability to one replenish. So say we're not in a proliferated architecture yet, and something is taken out or we have a failure or something like that, this gives us the ability to go out, put something together, put it on orbit, and maybe get a capability back faster than we could. So that's one avenue there. And then as things change so fast and something gets

on orbit or there's some other thing that we need to find out about, this gives the commander, General Whiting at US Space Command the ability to send a plan order to me to say, "Hey, let's go after. What can we do to take a look at this? What can we do to negate this?" And then we can get with Space Force staff and SSC to go, "Hey, what do we have out there that we can put up very quickly?" One, to send a message to our adversaries that we're watching and that we're aware of what they're doing and here's our capability to get after that, but also get something up there as fast as possible, not wait around until we find out what it is from other sources.

And so, I think this is a huge capability that US Space Command and our other service components to their combatant commands are going to be aching for.

Gen. Kevin P. Chilton, USAF (Ret.):

Yeah, General Gagnon. Thank you.

Maj. Gen. Gregory J. Gagnon:

I think this concept's even more important than it seems on face value. General Chilton highlighted how the conditions are ripe inside our US industrial base in order to make this concept a reality today. And we did act one improved it. Let me give you all a moment of caution that the conditions may be ripe for the Beijing environment to be able to do that as well. Over the last three years, we've watched the Russian launch market collapse. It collapsed because of the actions of Roscosmos, the further invasion of Ukraine, sanctions, them trying to hold one web hostage on a launch with their satellites because they were already in Russia. So demand has not returned to Russia for launch. Beijing and the CCP recognize this and they are rapidly expanding launch capabilities in China. They're expanding beyond their national spaceports today. And they're executing those first hops that happened before reusable launch, and we're seeing that inside China today.

What I want to share with this audience is that it's important not just for US companies, which probably will have restrictions anyway, but for international companies not to help the CCP move forward. Now that seems like an easy ask, but what does that mean? That means don't take launch contracts with Chinese launch providers, because commercial launch in China actually started in 2023. They're trying to gain international revenue that can help offset costs. That'll support national security launch for the PLA. So let's not help them. I think we should all agree on that. Not just in this room, but in our audience that's online.

Gen. Kevin P. Chilton, USAF (Ret.):

Great, thanks. So we used to have a thing called joint stars. I think they're all in the boneyard now. And GMTI was certainly a capability that the terrestrial warfighter desired and needed and used in combat. There's advantages to moving it to space. And Space Force has flowed money to the NRO to be the acquisition authority for this new constellation and capability in space. But what's not clear to me is who's going to operate and who's going to task the GMTI sensors. When the GMTI sensor was on an airplane, we had Airmen in the back and they were working directly for the COCOM who was tasking them, telling them where to go, what to image, and to affect the operational tempo and even tactical effects on the battlefield. So who's going to operate the GMTI constellation? General Burt, let me throw that at you.

Lt. Gen. DeAnna M. Burt:

No sir. It's exactly the same. Guardians will work the tasking of that system with the combatant command on what they are allocated of when the capability is available to them, working on the joint

staff's allocations and priorities that are given up. So that will be tasked, worked with the COCOM through the service components at each of the COCOMs, back to Guardians who will fly that satellite shoulder to shoulder with the National Reconnaissance office every day to provide those capabilities. So there is a definite partnership there with the intelligence community. That overall tasking and managing what the joint staff allocation is and those priorities will be handled working through Space Force's Space for that global capability. But the tasking, when it's over your head, that combatant commander has tasking authority, will set the priorities just as they did with JSTARS and GMTI will now be the same for space.

And this isn't the first, so let's be clear. I mean in denied environments, we've seen big wing ISR has problems getting into a Chinese fight, that's going to be difficult. So we're going to see many phenomenologies go to the space domain, not just GMTI. So this is laying the groundwork for where we go for the future and how to provide that critical ISR capability. Not only to the joint force, but as General Gagnon would probably also argue, how do we provide those critical space domain awareness or intelligence surveillance and reconnaissance and support of space force missions? How do we work that? And as every service, we need those capabilities. So we're proud to be part of the joint force and provide those.

Gen. Kevin P. Chilton, USAF (Ret.):

Yeah. Would you agree that in peacetime, it makes sense to share all assets and all intelligence collection across not only the COCOMs but the national intelligence community, but for this specific capability when you're in a shooting conflict, the COCOM needs to be the primary supported element and tasker and controller of the capability?

Lt. Gen. DeAnna M. Burt:

I think the key difference here, sir, is whether it's peacetime or wartime, you want that combatant commander to have that capability. Same thing happened with JSTARS. Yes, other intelligence entities, other combatant commands can request, let's say I'm UCOM, they can come to UCOM and request that I collect certain things. STRATCOM could ask UCOM to collect something for example. That's all up to the combatant commander and how those requirements rack and stack for their collection. But ultimately, UCOM would own the collection over their theater and what gets tasked. All the data, let's be clear, all the data is shared across the entire intelligence community and to everyone. So we are not trying to constrain the data from being used by anyone. So all the intelligence community will have access to anything collected from these platforms.

Gen. Kevin P. Chilton, USAF (Ret.):

Great. Makes so much sense, to put it in a data lake that people can draw off of. Super. So the Chinese recently launched a space plane. And it deployed six objects in space. So General Schiess, let me start with you and see what complications this provides you. And then General Gagnon, I'll ask for your intel assessment about what they're up to.

Lt. Gen. Douglas A. Schiess:

Well sir, thanks. Appreciate that question. So obviously, we are watching what they are doing with their space plane. I do want to correct something there. Those objects were actually what we're classified as debris. And they have since decayed. And so we are tracking the space plane, we're tracking the rocket booster that went with them. And we are obviously concerned as the Chinese continue to bring on space control capability and we have to have the ability to defend our assets. This is a high priority for us

to watch what they're doing with this space plane. They're doing experiments, they're doing that, but we are watching.

Gen. Kevin P. Chilton, USAF (Ret.):

Does it have similar maneuverability or does it have maneuverability on orbit that gives you trouble keeping track of it?

Lt. Gen. Douglas A. Schiess:

Sir, as you know, we're always looking. And we can track this vehicle.

Gen. Kevin P. Chilton, USAF (Ret.):

Great. And their intent, which was always what we asked the intel community. What do you think General Gagnon?

Maj. Gen. Gregory J. Gagnon:

I think that their space plane, which it's on its third mission if you will. So this is the third launch for them. The first one was a few days, the second one was about nine months, and this one I think went up on December 14th or December 15th. This space plane is designed for them to get to outer space, test experiments, also provide maneuverability for unworn collection probably. And a number of other sensing experiments that they'd want to do. It also enables them to practice remote proximity operations and things similar, which are advanced space operations. And that's important. That's important for them to develop as a space force. And it's important, but for us, it's threatening, right? We need to be developing advanced tactics and advanced operations in space so that we can learn and get better.

Our space plane is on mission number seven. It's currently in outer space. It's the X-37B. And on our space plane, we're doing an experiment for the kids down the street at the Air Force Academy. We're taking a bean up there to see how radiation affects the bean, but we're also doing space domain awareness experimentation, right? So we can better sense and understand the dynamics of sensing in outer space. Now, that's a US initiative, the X-37B, which is proudly presented by United States Space Force. But we're also working with our partners to improve our ability to see in outer space.

General Saltzman this morning talked about DARK, and he had a picture of it behind him, which was the dish we're going to put in Australia to help us observe deep space on operationally relevant timelines. So even though we have collection today, the collection we'll have in the future will be even better. Also briefed this morning was SĀCHI. SĀCHI was the two satellite payloads that were developed by MIT Lincoln Labs, which are remote sensors for space domain awareness that are going to be hosted on what's called QZSS, which is the Japanese PNT satellite network.

So with our allies and partners, we are learning to improve our space domain awareness in the very near future, by orchestrating our business plans to do so. That's something I don't think we were truly successful prior to having a space force. So although we have the world's best space domain awareness today, we will be even better in three years. And when I say better, I mean we will be even better with our partners, because we are stronger together.

Gen. Kevin P. Chilton, USAF (Ret.):

Certainly first principles in any domain that you're going to conduct operations, what's going on in that domain. There used to be an argument against us even talking about space superiority or space as a

warfighting domain back in the day when we so depended on space and none of our adversaries did. Arguably China depends on space as much as we do today to achieve their goals of keeping us out of the Western Pacific. Does this impel us, General Schiess, to develop counter space capabilities to make sure that we can either degrade, deny or destroy their capabilities that frankly holds our fleets at risk, holds our aircraft at risk, operating in the Western Pacific?

Lt. Gen. Douglas A. Schiess:

Sir, thanks for that. And obviously very important question. So at US Space Forces space, and in my CJFSCC role for Commander of US Space Command, I have three lines of effort that I have to go after and one is I have to protect the joint warfighter from space enabled attack on them. And that's exactly what you were getting at, the ability for the Chinese or the Russians or anybody else to use space ISR or other activities to be able to target our Soldiers, Sailors, Airmen, Marines and Guardians out there. And so we have to come up with capabilities that allow us to protect them from some space enabled attack. And so yes, we have to develop those capabilities.

It gets back to what General Gagnon was just talking about with DARK and our ability to know our domain, our ability to know when, as I think General Saltzman said the other day, when something moves, we know it moved and then we calculate where we think it's going to go next. But we need to get beyond that. We need to know where it's going. And then we have to work with our intelligence folks on what is the intent of what they're doing. So that helps us protect the joint warfighter. We also have to defend our own assets. We have to make sure that our high-value assets, our protected communication, our regular communication, our missile warning, and we talked about proliferated architectures and things like that, but we have to have capabilities to protect our own assets because we have to do the next mission, which is deliver those space capabilities. As I've heard general Saltzman say many times our joint force is architected and grown out in the effect that they're going to have space to do their job. And so we can't allow that they don't have that. So we have to protect, we have to defend and we deliver and that means that we have to have those capabilities, sir.

Gen. Kevin P. Chilton, USAF (Ret.):

Thanks General Gagnon. You had a point.

Maj. Gen. Gregory J. Gagnon:

I would add a few things. Those are all important. And all of that starts with providing General Schiess with improved situation awareness. And although I talked about those longer-term projects that were government-to-government, there's also SSC initiatives with our own commercial sector that are dramatically improving our space domain awareness today. We have gone, just in my last two assignments, from a situation where we could handle and operate and direct and orchestrate 19 telescopes around the world, to over 600 telescopes around the world, by buying into a couple commercial entities through Barb Golf and our outstanding activities down at SSC. So space defense starts with space awareness. And we've made some significant progress in just the last two years.

Gen. Kevin P. Chilton, USAF (Ret.):

Right.

Lt. Gen. Douglas A. Schiess:

Yeah. So General Gagnon's talking about our JCO that does that. And so that's a part of S4S, great partnership with SSC and Barb Golf to be able to do that. And we are ratcheting that up. And that brings

us back to the coalition that we just talked about because it's not just Americans that are doing that, we're now working that with our UK partners, our Australian partners, our Japanese partners, and it gets us the capability to look after things that we can use our assets to look after maybe higher value, but we can then use this to look across the whole domain. So it is a game-changer. We'll continue to work on that, but we also have to bring on those exquisite capabilities to get after some of the things we'll have to do if we get into a conflict.

Gen. Kevin P. Chilton, USAF (Ret.):

Great point. No doubt. Our great allies and partners give the Chinese pause very important point. But you brought up commercial, so let me go down that path. Of course, we've used commercial satellites in past conflicts, but not in an environment where they were put at risk by an adversary. We surged commercial comms for the Middle East for many years and use commercial satellites for that. But we have to think about it a little differently, I would suspect, if we're using those in an operation, whether it be comms or ISR from space, commercial imagery from space, whatever, how are we thinking when it comes to protecting them and defending them against these threats or deterring attacks on them? Any thoughts on that?

Lt. Gen. DeAnna M. Burt:

No, I think we've seen from the outset of the war on Ukraine, we had a lot of commercial capabilities being used by the Ukrainians in one of the first salvos through cyber attacks and other means were the Russians attacking commercial space capabilities. They've also had extensive jamming of those capabilities to try to deny them to the Ukrainians for use. So absolutely, I expect that in any fight with any potential adversary, if we are using commercial capabilities, those commercial capabilities are going to be at risk. So how do we create, again, that depth and ability to use both commercial in conjunction with our military capabilities? That's important to us to create that resiliency, but knowing that then that means they're going to be attacked. We spend a lot of time with our commercial partners. I'm sure Doug will elaborate on the commercial integration sale, and he's already talked about the JCO, but how do we talk to our commercial partners in war games and exercises about what does that mean and how would you protect them and in what ways would you protect them and what does that mean to their business model?

Because again, some of these commercial companies are selling to multiple nations, not just the United States. And so how would that affect their business model and how has that really put in our contractual agreements of how we would operate together in the domain? I think all of those are important moving forward. We also know that each of the service components that we have would be if we had commercial capability that was critical to their mission, they would be putting those out as part of a critical asset list. They would be nominating those to the critical asset list for let's say INDOPACOM. General Mastalir, would be providing that for Admiral Aquilino to say, "Hey sir, these are the commercial capabilities you most depend on and care about for your mission." That would then get pushed to Space Force space and US space command to look at overall then how does that get compared with and prioritized across the globe? And then what do we have from defensive capabilities to get to a defended asset list. And Doug, I'll turn it to you if there's anything else you have to talk about that process and how you guys do that.

Lt. Gen. Douglas A. Schiess:

Yeah, thanks, General Burt. So obviously just like any other component that's out there from a perspective of we have to defend our assets that we have to be able to execute our mission. And so as

general Burt just talked about, each of the components that are supporting a geographic combatant command can come up with the space order of their critical asset list. And then that comes to us. Some of that is on their defended... Wow, I can't say that word. Defended asset list. And so they'll work through that. But as it comes to on orbit capabilities, and that's up to us to do that, we have to work with all the other geographic combatant commanders and space command to come up with the defended asset list. And so commercial is very, very important in that. And actually General Mastalir and I did a exercise last June, PAX Entry, Space Entry, and the conversation between the two of us on what is the most important commercial assets that you have and then what can we do to support you on that to get after Admiral Aquilino's priorities.

So I do want to talk a little bit about the commercial integration cell. So at the Combined Space Operation Center at Vandenberg, we have the commercial integration cell. It's 10 companies and they're there. They have cleared individuals to the top secret SCI level that can be on our ops floor. Not all of them have someone on the ops floor all the time, but then we have the calm capabilities to get to them. And so General Burt talked about the Russian invasion into Ukraine and the ability for them to go after some of those commercial assets. We were talking to that commercial asset because they were available, we were talking to them, they were providing information that then we were providing to our other nine companies. 10 is not enough for that number. We have to expand the commercial integration cell to get after that.

And then just recently, there was a TRI Seal agreement signed by the commander of US Space Command, the director of the NGA and the director of the NRO, to get after not just those companies that do commercial SATCOM and maybe commercial SDA, but also provide some of those assets to the intelligence community.

And so now we are on hook from US Space Command to provide threat warnings, to them to provide information, but we also get something back from them. Sometimes they may have some information that we may not have because of the capabilities that they have on orbit. And so then they're providing that to us that then from a nondisclosure agreement, we can provide out to everyone else. And so we've got to expand that because it's only going to get more and more important to have our commercial partners with us. But as you said, other nations out there are going to go after these assets as well. And so we have to be able to protect them as much as possible.

Gen. Kevin P. Chilton, USAF (Ret.):

There's probably some lessons learned from the '80s when President Reagan flagged all the vessels in the Persian Gulf, which there's consequences to attacking a US flag vessel. Our commercial partners should have American flags, I suspect they all do on their satellites. And so a similar responsibility to defend them, not only because of our dependence on them, but because they're American, makes sense to me.

Lt. Gen. DeAnna M. Burt:

Sir, I think it is important to you that we codify this. So I think you've heard the Department of Defense is looking at its own commercial strategy and how we move forward on that. We also as a Space Force have been building that commercial strategy. We want to make sure we dovetail with the DOD strategy. We were close to releasing ours, but with the DODs now coming out and being in work, we wanted to make sure we did a last check before we got ahead of the DOD strategy. But that should be coming here in the next few months. But what I think is important is what you just talked about. How do you contractually codify that? How do you start to war game. And General Saltzman talked yesterday in the classified session about experiential relationships. So those war games, those exercises, how do we play

through these scenarios, not just talk about them, let's play them through in a TTX or an exercise or war game and find where those pain points are, friction areas, and then how would we codify them for future use? So I think there's a lot of good work here still to do, and how do we put it down and continue to evaluate it over time?

Gen. Kevin P. Chilton, USAF (Ret.):

Great, thanks.

We're about at the end of our time here. I want to end with a point that the space order of battle, it's not something we're just going to do and put on the shelf. And we talk about today about refueling satellites on orbit, repairing satellites on orbit. None of our satellites on orbit today have that capability. And so it's going to demand a new space order battles as we put more technologies forward to support both the terrestrial fight, but also to make sure we can gain a maintained superiority in space should someone come after us. So this work on the space order battle's a living and breathing effort that takes constant attention. And I feel we're all in good hands with this group of individuals shepherding it through at this point in our history. So thank you very much for participating today, how about a round of applause for our panel folks.