

# Spacepower Security Forum 2023 | A Mission to Protect and Defend Assets in Space

[00:00:00] **Lt Gen Dave Deptula, USAF (Ret.):** Okay that was a good introduction by our Chief of Space Operations. I'm glad you all had the opportunity to ask some questions of him. Now we're gonna move on to our first panel discussion this morning. And our topic is the mission to protect and defend assets in space. Everyone in here has talked about this before. Look, space is a contested domain. It's no longer peaceful. Our adversaries are contesting it, using all means available, not just kinetic, which is perhaps the most worrisome but non-kinetic as well.

And I think it's important to recognize who, we didn't choose this vector our adversaries did. But we've gotta respond. So just like in any other operational domain our forces have to be to protect US freedom of action. And what that demands is that the US National Security Space community, particularly United States Space Command and the Space Force, consider new strategies, operational concepts, and associated technologies.

So what this panel is gonna do is to provide some insights regarding just what sort of technological solutions might be the most helpful? And how this ties back to core mission imperatives, especially in an era where our adversaries not only not just waiting, but they're accelerating their activities to compound the challenges that we all have to face. I'm just tickled pink to have the folks that we have today on stage. To my left is Major General Dave Rock Miller. We go way back. At my age, I go way back with everybody.

[laughter].

But Rock is a Director of Operations, Training, and Force Development the J3, if you will, stationed out at headquarters, United States Space Command at Peterson Space Force Base in Colorado. Welcome, Rock.

[00:01:52] **Maj Gen Dave Miller:** Thank you.

[00:01:52] **Lt Gen Dave Deptula, USAF (Ret.):** Then next to Rock is Ms. Stacy Kubicek, the Vice President and General Manager for Mission Solutions at Lockheed Martin. Thanks much Stacy, for joining us. And then of course,

you all are very familiar with General Chilton. Thanks Chilli for joining us on this panel too.

[00:02:08] **Gen Kevin Chilton, USAF (Ret.):** Thanks Dave.

[00:02:09] **Lt Gen Dave Deptula, USAF (Ret.):** A again, just to put everyone in perspective, historically, and I know everyone in this room, I think... I don't see any real youngsters here. It wasn't that long ago that you couldn't say space and offense in the same sentence together. I have to share a little story. So I'm out at the Air Force Academy, and I'm giving a lecture to a group of cadets who are focusing on a space course. And at the end of my comments, one of the cadets asked a question about "Hey, sir, do you envision there ever being war in space?"

And immediately I went "of course." One of, and I won't say who it is, I protect the innocent, but older guy, former astronaut, not Chili.

[00:02:51] **Gen Kevin Chilton, USAF (Ret.):** [laughs].

[00:02:51] **Lt Gen Dave Deptula, USAF (Ret.):** Is sitting in the back of the room and he's a mentor for this class. And he jumps up and he goes, "Dave, you can't say that." And I'm going "sure I can." First it's an academic institution. And second, of course, we're gonna fight in space. But that's how inculcated everyone was from a policy perspective, not to be able to talk like this. Now, of course, we don't want to see conflict extend space. But like I said, we are where we are with respect to our adversaries. So let me kick this off with a question to both Rock and General Chilton. That General Saltzman's openly testified that certain Chinese capabilities are causing us concern.

I'm not gonna go through a long list. You know what they are. And obviously China's not the only actor. The Russians are out there too. They're going the same way. But what do you all see as the most serious threat to our space assets? I mean, there's obviously the direct to send A-Sats, but there are other elements out there too. What are your thoughts in that regard in terms of threats? Go ahead Rock.

[00:03:54] **Maj Gen David Miller:** All right, sir. Thanks sir, for the opportunity. You are old and it's good to see you again.

[00:03:58] **Audience:** [ laughs].

[00:03:59] **Maj Gen David Miller:** I was remembering the discussion you and General Chilton had, where you were talking about that General Chilton, he gave you your first either sim ride or check ride or something. And I've got my former weapon school instructor sitting right there, and I have marginally effective in my head right now. So-

[00:04:14] **Audience:** [laughs].

[00:04:14] **Maj Gen David Miller:** ... if I speak at a more deliberate pace, it's because I don't want to hear, "Jesus. You can do better than that."

[00:04:19] **Audience:** [laughs].

[00:04:19] **Maj Gen David Miller:** I guess I'll answer that question this way. When US Space Command thinks about protection and defense, we think about that as a two potty problem. Certainly the protection and defense of US, and if required our directed allied and commercial space systems is a primary task requirement for us, laid out in the unified command plan. The president has given us that mission. All of us have a mission to protect and defend the joint force. So I'm gonna answer it in two ways. There is probably no single threat vector that warrants preparation planning capability development, concept development, and where needed test demonstration and operational demonstration over one another.

I will highlight a few concerns on the protection and defense of US allied and if directed commercial systems this way. As the CSO, I think rightly illuminated the awareness of the cyber threat vector as demonstrated previously in Ukraine by the Russians. The EW threat vectors, which we've been aware of for quite some time. But you've seen them most prominently against or at least discussed openly, which is a new thing by Russian Federation leaders focusing on commercial, not just US systems. Those obviously represent a concern today, and those are things that we obviously work through and plan through. And frankly with some of your companies plan in detail with to ensure that we have a- an ability to respond.

The direct ascent is a big concern, I think that is the most from a destructive capability standpoint, that is the most disconcerting of what we've seen probably over the past two years. Incredibly irresponsible, reckless to the point where we, the United States government, through US Space Command to NASA, were the ones waking up the Russian astronauts to get to the safe escape within the International Space Station. Irresponsible on many levels.

So we get concerned about that. Because as the chief said, certainly 1500 pieces of debris we're tracking more than that. Over time it continues to be a problem. And it also represents the challenge that we talk about with sustainability of the domain. If God forbid a US aircraft gets shot down or if we have to shoot down another aircraft, immediate results onto the ground, right? You get to see that eliminated from the battle space. These are things that are gonna last for years, and depending on the orbit, they're gonna last for decades, and we're gonna have to contend with them. And I thought that the highlight of the maneuvers that the ISS has to take, and the conjunction concerns that we have was particularly noteworthy. That is a big great concern.

Not the only threat vectors though. I recommend everyone look at... We ring our hands often about the intelligence community sometimes, and the challenge with classification. Look at the DIA Security Challenges 2022 report. It is very thorough in my view and a great fact of document of what we assess our principle potential adversaries and the PRC particularly the PLA and the Russian Federation have in terms of capability. In that vein, if you keep reading onto the next page, the threat from space in my second answer is into and from space, we have a responsibility, both as a US Space Force guardian, but also as the J3 US space command to prepare for threats to the joint force.

And the threat to the joint force is very concerning to me. If you look at, and again, read this document, it's also reflected to some extent in the National Defense Strategy. If you look at what the PRC, for example, has built in their C4 ISR network, it is a network that is built to find, fix and kill maritime and Air Forces in the Pacific. And we can have all the resilience you want, that will do nothing about that problem set. If you continue reading to the last page, it's artful how they did this. It actually talks about research and testing of the PRC focused on space-based kinetics. That's delivery from space to the ground. And the example provided that you all remember from almost about 18 months ago now, is the fractional orbital bombardment demonstration that the PRC did.

Those things concern me greatly. Our joint force in particular, it's actually abatic to say that we are thoroughly integrated into the joint force from a space perspective and have been for decades. People do not realize how fundamental that integration is. The joint force is sized reliant on space capabilities being there. The ability, the changes, the calendar of the Marine Corps made in the force element relies on what? The ability to mass deliver precision fires. Communicate over the horizon, find your targets before the adversary finds you. None of that can get done without space. So it's a two, it's a two piece problem when we talk about protection and defense. And though, I am absolutely

worried and we focus on with the space force, but all the services protection and defense of US allied and if directed commercial systems.

I'm also very concerned about the protection and defense of the joint force from what is increasingly pernicious and capable, frankly C4 SR capability of the PRC, but also the Russian Federation. So-

[00:09:11] **Lt Gen Dave Deptula, USAF (Ret.):** Okay, thanks for that. General Chilton, your thoughts on-

[00:09:14] **Gen Kevin Chilton, USAF (Ret.):** Yeah.

[00:09:14] **Lt Gen Dave Deptula, USAF (Ret.):** ... particular threats.

[00:09:15] **Gen Kevin Chilton, USAF (Ret.):** Yeah, so the threats to our space capabilities, and I'll kind of go back to the fact that the Chinese spent the 1990s studying how we fight wars. And you're one of the people they studied for sure in how you planned operations for Desert Storm and then Iraqi freedom. And I think one of the things you targeted early on was you targeted the communications capability of a strategic level to talk to the operational level, to talk to the tactical level of our adversaries. And disconnected those completely, which left the tactical level wondering what they should do next, and the operational level blind.

The Chinese said bluntly in '98, we can't take on the US force on force, so we're gonna go after that ability to do operational command and control, and push it down to the tactical level. And so if I were them today with the capabilities they have in a conflict, I would want to immediately blind US commanders by taking away anything they could get from a reconnaissance aspect from space. And I would make them unable to communicate with their operational level commands, and with their tactical forces in theaters. Blind and mute all US air, land and naval forces in the area of operation. And I think that almost extends to Hawaii now in the Western Pacific.

And then I would want immediate feedback before I took my next step as to whether or not I was successful, or if I failed before I took the next step in my operation. Cyber is certainly important. But cyber's hard to test and prove that it's gonna work. I think cyber efforts will certainly be used by our adversaries. But I don't think they will rely on them to cross the streets. I think more likely they'll use them to break the American will at home to support the defense of Taiwan in that particular scenario by making life uncomfortable for the average citizen in the US.

Today, ground-based directed energy or even or however we apply directed energy from the Chinese, however they might do it, does not prevent... present a risk to some key capabilities we have in the geosynchronous orbit. They certainly can disrupt, likely. I don't know if they can destroy or not, but they can make things difficult in enough for our Leo constellations. So if I'm going to blind and I'm going to make mute US forces, I'm gonna rely on direct ascent, Asats and co-orbiting ACEs to go after those keynotes on orbit. While I'm simultaneously doing a cyber attack to try to hopefully disrupt the command control elements in the terrestrial domain. And and then I, and I would do that because I need immediate feedback on whether or not I'm successful before I proceed. So I would rate direct ascent co-orbital as the most serious threats. Followed by directed energy and cyber attack.

[00:12:13] **Lt Gen Dave Deptula, USAF (Ret.):** That's very good. And leads to kinda a follow one discussion in the context of how do we best counter that? Which rapidly gets us into a a discussion of preemptive attack, and means to negate those physical means. Perhaps using non-lethal effects, which gets us to the cyber discussion. Which is kind of interesting 'cause to, to take what you said is that, if I understand it what they can be assured of measuring is lethal direct ascent Asats.

It is just like we've, some of us have talked about before. If you are gonna go against an adversary, let's take country names off of it. And you're going into adversary X and you are, physical force is reliant upon the success of a cyber op, you have to have the feedback.

Either that or a hell of a lot of trust before you put your pink body in the threat space.

[00:13:12] **Gen Kevin Chilton, USAF (Ret.):** You gotta practice with it for commanders to have confidence that the effects will be achieved. And I don't see much of that happening frankly, on either side.

[00:13:21] **Lt Gen Dave Deptula, USAF (Ret.):** I think there's also a deterrent piece here too- that we ought to think about. I would suggest that we have been... We as a nation and as a military have been too quick to dismith, dismiss lethal options, which just gives aid and comfort to our adversaries going they're not gonna do that." As opposed to increasing the uncertainty in our adversaries minds that we just might. But that's another discussion. But thanks for those insights and getting the thought process going.

Rock kind of a, sort of a follow on. But obviously all of what's important about what we were just discussing is a whole notion of space situational awareness.

And General Saltzman talked about it in as in his C-notes. But what are some of the key areas that we need to focus energy and resources on to realize the kind of space situational awareness that's necessary to assure us that we got a good handle on what's going on?

[00:14:19] **Maj Gen David Miller:** Yeah, that's that's a good question. There's I think the CSO mentioned, talked very eloquently about it. I need to be a little more simple in my view. But also my boss, General Dickinson, the commander, US base command has made this his number one priority for closing gaps as well. And the reason is pretty straightforward.

There used to be a phrase, we're, 90% of SA is knowing what the hell's going on? I'll be honest with you the network that we built the, it is entirely [laughs], real word looking was the term that was used by the CSO. It is based off of observations in the past to predict likely orbital destination in the future. That's why everything comes back with the elements set associated with it. And an uncertainty volume frankly, associated with it because a lot can happen.

As a result of that. I'm reminded back when General Chilton actually was the Air Force Space Command commander there's three things that distilled when he put out a study on what we need to do to improve space surveillance at the time. I think there's three things that drive to a fourth. The first is custody. We do not have the level of custody we need in order to provide a level of accuracy associated with either indications or warning threat determination, hostile intent. And then ultimately, if needed, the ability to target. We are largely based on the next step. The next C which is capability reliant on systems that were built and prototyped based off two principle phenomenologies.

The one is optical, which is measuring light reflected off of a given satellite. And you can get a lot of information from that. I don't want to diminish you. The second is radar, which you'll get an ac- more accurate obviously depending on the radar. But you'll get a more accurate position state vector of where it is. Again, where that primary focus of our network has been derived from is associated with dual mission systems that were largely built around the missile warning network to defend the United States. And the optical sites that we have, because we sometimes do people too many favors by publishing too much about our systems are in a place where it sometimes can be difficult for them to get the information that they need. So capability is the second one.



An optical signature of metric or metric soy data does not provide me the capability that I need to determine threat indication to warning intent. And if needed the capability to target for disruption. So you're gonna have to improve the capability there.

The last piece in terms of the 3Cs that drive to the fourth is capacity. We have, we are in the process of shifting from, and I'm very excited to hear about the success about the space development agency's launch. But we are shifting in the process from shifting from a permissive force design. That was what I grew up on, to a war fighting force design. We are not there yet. We're in the process of getting there. And as a result, capacity was not the principle force determinant. The ability to fight in the domain, that was not the principle determinant. And it was really based off of efficiency.

What is the capability that we can build to cover down on the missions with the least impact possible? And decisions were made. When you look at the first missile warning architecture that we started with for ground-based missile warning, there were two more radars that covered the southern hemisphere. They covered parts of the southern hemisphere. One at El Dorado and one at Robins. And those were shut down because of cost. So when you start talking about capacity, I have to have enough to be able to survive in conflict, but also delivered me the indications warning, targeting information, capabilities and intent. So that can inform national security decision makers about options that we have. And that capacity is something else that our focuses on.

Those three drive one thing, and that is coherence in battle management. Right now the tools that we have don't yet and General Saltzman about decision support aids. They do not yet provide battle management at the right levels in order to effectively assess those things and then quickly develop options that can outpace your adversary. I'm with general Saltzman on this. I'm not really interested in the name of it. It needs to be delivered. And if you deliver the first three without driving towards coherent battle management, you didn't really give me much 'cause I can't use it.

So I think those are the four Cs that I focus on. The space demand awareness integrated capabilities document is much more nuanced in the approach. But those are the things that I focus on as the primary things that we need to get, and we need to get right fast.

[00:18:39] **Lt Gen Dave Deptula, USAF (Ret.):** Cool. Real quick follow on here. The budget has \$18 million in it for commercial space assistance in terms of data for space domain awareness. Can you comment on,



[00:18:50] **Maj Gen David Miller:** Yeah.

[00:18:51] **Lt Gen Dave Deptula, USAF (Ret.):** ... the relevance and

[00:18:52] **Maj Gen David Miller:** Absolutely.

[00:18:52] **Lt Gen Dave Deptula, USAF (Ret.):** ... the importance of that?

[00:18:53] **Maj Gen David Miller:** I think General Burt has some comments about Space Force, but so we absolutely rely on and we have a joint commercial operations underneath US Space Command that relies on and integrates at the unclassified level. Many of the systems that some of the folks in this audience bring together. It's a best athlete competition based off of the needs that we have to cover some of those gaps that I mentioned, in terms of location. 'Cause if you're using terrestrial based sensors, location does matter.

And it also highlights best of breed in terms of their performance and capability to get after it. To, to what I get updates literally un-class on my cell phone for threats of interest that I'm concerned about from that center. And we are able to measure those against what we have. On the other the classified realm in order to make assessments of what that is. Obviously, coherence would bring those two together and produce one solution at varied levels of classification in order to deliver not just the information of what, but also so what and what next? That's what the coherence and battle management delivers that we need to get to.

I will note that it's not just the 18 million for Commercial Space Force is getting after this. If you're gonna get custody I think your study showed the same thing, sir. You're gonna have to go on orbit. In order to maintain custody, you're gonna have to have a system that is providing you that from Mount Orbit. So I think we are in the process of... Obviously we've done great work with the geo space, geogra- geosynchronous space, situational awareness platform, GSAP. Sir Barker, we'll getting ready to get fielded at the end of the year, or launched at the end of the year. And for precision in some of that specific information that we talked about, things like the deep space, advanced radar capability will provide us a level of capability.

So I don't wanna make it sound like it's not getting attention, it is getting attention. What I'm simply saying is the f- the service... The Air Chief used to say, "Hey, I'm building the Air Force for four chiefs from now. Right?" General Saltzman's building the Space Force for three or four chiefs from now. My

boss's time horizon is the next year or two. I'm not really interested in how hard it is. I want results. And that's the focus that we have to have.

[00:20:49] **Lt Gen Dave Deptula, USAF (Ret.):** Great. Stacy do you want-

[00:20:51] **Gen Kevin Chilton, USAF (Ret.):** Typical's, typical COCOM there.

[00:20:52] **Maj Gen David Miller:** Yes sir.

[00:20:54] **Ms. Stacy Kubicek:** [laughs].

[00:20:54] **Dave Rock Miller:** It's easy to do, sitting up here now with the mic on [laughs].

[00:20:57] **Lt Gen Dave Deptula, USAF (Ret.):** Send us money.

[00:20:58] **Maj Gen David Miller:** Exactly right.

[00:20:59] **Lt Gen Dave Deptula, USAF (Ret.):** Yeah, Stacy, let me bring you into the conversation. Obviously we just heard that space situational awareness has got a lot of demands on data. Could you talk a little bit about how software solutions may be assisting in some of the challenges that Rock's facing?

[00:21:14] **Ms. Stacy Kubicek:** Absolutely. Thank you. Appreciate it. We start thinking about data the exciting thing for me is we've talked a lot about the different assets and the different things. And actually General Saltzman, I appreciated his comments this morning. It's gotta be the holistic picture. It's gotta be the end to end. And that's really where data starts coming into play. But to your point, there's a lot of data coming in, right? You were talking even about the 18 million going towards just commercial data alone.

So data's only as good as what you can do with it and the intelligence that can be created with it. So if we've got a bunch of data and we're not able to actually do anything with it, it doesn't make us any better. It doesn't allow us to defend against the threats, the increasing threats that we have any better. It doesn't allow us to operate any quicker, get... Shorten that sensor to shooter timeline that we talk about. It does not help us the way we need to. So software is really a critical component for that.

So how can software be a critical component? There's so many ways and I think one of the biggest things is AI and ML cannot be underestimated and what it can help to provide. Now I'm gonna caveat that with AI and ML can't do

everything. There's still a very critical component with the human on a loop for some of those hard things that we still need to absolutely go do. But our resources aren't unlimited, right? So allowing software to do some of those things that can help to do... help to get some of that information to the war fighter quicker where we can is absolutely a good aspect there.

Another thing really this... that's more from a reactionary standpoint and I think about sitting with operators at the different operations sites, and what they need to be able to make decisions quickly. And to be able to do that effectively without 17 screens that they have to go decipher all that data with, right? But then you flip that and how can we get ahead of the threat too? And that's where software can be really critical as well. When we think about predictive modeling we do a lot of things with digital twins. So when you start thinking, we were talking a lot about missile warning and capabilities, and those are some legacy systems.

So when we're modernizing those systems, how can we use some of that predictive modeling to say, "What's the threat gonna look like in one year, two years, three years, five years, six months from now?" It's changing that quick. So how can we use those software tools to help to prepare our war fighters for what they need to be able to do and be able to make those decisions as well very effectively?

[00:23:19] **Lt Gen Dave Deptula, USAF (Ret.):** Very good. Wonderful insights. Separate but related topic, one of the things that General Saltzman's argued for is that space force needs to deny first mover advantage on orbit. And so far, one of the ways the Space Force has decided to proliferate and disaggregate future systems is the manner in which he's gonna approach that challenge. Chilli, be interested in your thoughts about how that disaggregation and the ability to maneuver actually deters our adversaries.

[00:23:55] **Gen Kevin Chilton, USAF (Ret.):** I think it's an important part of a overall strategy, the disaggregation and proliferation. It... And I also like the fact that it promises and General Saltzman refers to this, there's a promise that it could flip the cost imposing equation. To if you've got enough low expensive satellites spread out in orbit and resilient architecture, it's gonna take a lot of anti-satellite capability to take it out. And it's always good to have it be more expensive to defeat you than cheap to defeat you. So I think that's a big plus.

But really the whole idea of proliferation disaggregation is a defensive part of a deterrence equation. And history teaches that's never enough. Witness the measure, no line. So I think it's part of a deterrent strategy, but that deterrent

strategy also needs to have the offensive threat signaled to the adversary to deter them from attacking it. And I would say to effectively deter. And then of course win, if deterrence fails.

The adversary's got a doubt that they can effectively take out all the capabilities that our joint force relies on to conduct operations in the Western Pacific from space. So they have to doubt that they can achieve that. They have to doubt that they can blind our operational level from the tactical level and cut off their communications.

And they must also believe that we have the capability and will, and it would be best if we could demonstrate that, to hold immediately their space architecture at risk. that they depend on, to maintain control of their forces within the first and second island chain. To threaten our carrier battle groups as they sorted from the Eastern Pacific to the Western Pacific. To protect and or to defeat their ability to attack our air, land, and naval bases in the area of operation. They've got a, they've got to believe that we will go after them and take that away from them.

Now, whether we will or not is a choice that a president and the commanders will make at the time. But from a deterrence perspective, they need to know that this is what we're gonna go after. And if they're counting on that to effectively when the conflict in the Western Pacific, it's not gonna be there for them.

[00:26:19] **Lt Gen Dave Deptula, USAF (Ret.):** That's very good. Rock, you wanna chime in there at all?

[00:26:23] **Maj Gen David Miller:** Great job, sir. [laughs]. I'll add just got one point I guess. So the challenge that we look at any of these adversaries, potential adversaries, PRC, Russia, who, whoever. Remember that in, in context, this will be a... if we are called upon this will be a US military response, it won't be just a space force response. Now to general Chilton's point, I 100% agree that we absolutely have to get... I was thinking back, it was like two weeks ago I saw a feed on... I don't have Twitter, but my son does. And he was telling me that, "Hey dad looks like the SBIRS GEO-6 was accepted. Why are we telling our adversaries that? But that's one question.

But separate from that, there's a reason it's called GEO-6. You guys know what that is, right? It's a 6-1. And the reason I'm bringing that up is to general Chilton's point, and underscores it. I mean, if you're counting on one hand the amount of assets you got to go to fight with, you are not ready to fight. And as a result, it is essential, it is fundamental that we build resilience into the key

critical mission sets that the US military, the entirety of the joint force and our allies will depend on. The SDH tranche for com is one. Missile warning, missile tracking obviously is similar. I frankly wish we wouldn't tell you how many we were putting up there, but I think it's good that we proliferate to the extent that we demonstrate we can take a punch.

Think about history has sold us a couple other things too. Particularly about regimes that are uncertain about the scale of escalation and the pace at which they do it. Signaling early with what testing the will of the adversary is important. If we can't fight through that initial salvo or whatever that demonstration is, and demonstrate some level of resilience that we're gonna be able to not just take it but respond, as general Chilton said, then it's not credible. And to general Saltzman's point, it's not a combat credible force presentation. So I think that's it.

I would lastly say that your joint forces get after this. Earlier in the fall we spent three hours as the every three star in the joint force focused on a war game, in particular on space. How we would protect and defend and deliver capabilities to the joint force. Our briefed to the chairman and the entirety of the service chiefs. That has never happened before. And every COCOM had to show up ready to talk about what their role was and how they integrated into this. Any solutions, operating concepts plans that we develop, we'd be... it would be to disservice to the space force to only talk to the space force.

We look to cyber command. So I spent more time with the cyber com and SOCOM J3s than almost any other J3, other than picom. And it's because of the partnerships that are being developed. We will take at the time of our choosing, whatever the response action that we think appropriate. But it is not something that we're sitting on our hands waiting for. And I wanna assure, General Chilton, we are, they're getting after it. We are in a transition from a permissive force design to a war fighting force design. When we transition, and as we transition, those operational plans and concepts will evolve. Right now they're appropriate for where we are and in fact, General Burt hates it. I'm constantly trying to pull capability to the left and ask for it now. And she really hates it when I do that. But that's my job. So-

[00:29:36] **Lt Gen Dave Deptula, USAF (Ret.):** Hey, all it takes is money, right?

[00:29:37] **Maj Gen David Miller:** That's right.

That's right.

[00:29:38] **Lt Gen Dave Deptula, USAF (Ret.):** Let me pull on that string a little bit more with respect to proliferated satellite constellations. They may in fact remove the vulnerability of, a handful of fat juicy targets to quote-

[00:29:51] **Maj Gen David Miller:** Go ahead.

[00:29:51] **Lt Gen Dave Deptula, USAF (Ret.):** ... General Hyten. But they're the Chinese have embraced the whole notion of systems-based warfare.

[00:29:57] **Maj Gen David Miller:** Yeah.

[00:29:58] **Lt Gen Dave Deptula, USAF (Ret.):** So what is there, this is for all of you. But let me give Stacy the opportunity to jump in here. What else should we be looking at in the context of systems to harden as we look to prepare ourselves to go against a threat who's got a variety of different avenues they might attack us on?

[00:30:18] **Ms. Stacy Kubicek:** No, thank you for that question. I'm actually flip a little bit. You were just talking about the importance of the resiliency in actual space, right? In that domain. And I'm gonna pull in the ground side of it actually from that perspective for where I would say we need to focus. And why would I say that? Actually several senior leaders have been coming. We were just talking about general Saltzman made a few comments around it this morning on ground and the importance of the resilience on the ground and how we protect that. I think it just brings to light that as we continue to add things, yes, absolutely it's needed from a resilience standpoint, not just in space, but air, land, sea, cyber, all those need to be resilient.

And they're all becoming part of a bigger network. We are... Everything is becoming a node on that network at this point, right? And so how are we hardened in each of those pieces? And when everything from a data standpoint is getting passed down through that ground and through different avenues, we have dif- various clouds, different levels of cloud environments that we have now. Those are the capabilities that if we're gonna be able to trust the data, and also be able to operate quickly with that data, we're going to need to be able to harden that.

Now hardening sometimes comes at a price, right? When you start talking about cyber and you wanna harden everything at every level, you're adding a lot of latency to the system. We can't always afford latency in the system. So it's a prioritization as well of where and what we want to harden from that standpoint.



But I think ground is absolutely a critical component that we need to really focus on hardening.

[00:31:37] **Lt Gen Dave Deptula, USAF (Ret.):** Yeah. Very good. Rock, Chili, anything to add?

[00:31:40] **Gen Kevin Chilton, USAF (Ret.):** Go ahead Rock.

[00:31:41] **Maj Gen David Miller:** Yes agree the ground component's important. I mean, all the space link, if you're looking at the system, that general Saltzman also was talking about space, linking ground, all of it's gotta be done. Two parts I would add to that. So in ground we often talk about the C2 Center, 100% percent gotta have that hardened. But the threats and risks that you've seen put most publicized lately we're actually with terminals. And the vulnerability that they have as well.

So we can't forget about... You know the joint force. Typically we have a pacing lead for the deployment of a capability from a terminal. The Space Force will take that, and then it gets disseminated joint force never as quickly as we want. You have to have this infrastructure for hardening all the way down to the terminal to receive the data, or it doesn't get there. You can do all the C2 and commander control and release of whatever that warning, surveillance, targeting information is. If we can't get it to the user it's all for naught.

The last piece in terms of hardening is remember the resilience piece is certainly the number. What's more important and one of the big lessons? Certainly logistics was a big one. You take out of the observations from Ukraine, the capability of people, particularly the will and moral courage of the Ukrainians to develop new approaches to defend that were frankly not written. They're getting trained on capabilities that outpace how quickly we train our folks. And I think that this is something that we gotta keep focused on. It's a mindset and a culture, not just a capability.

So as you're developing the TTPs, as you're powering down C2 from the operational level to the tactical edge. Empowering those war fighters to be able to these guardians, to be able to talk to the user at the same time and have an accountability to the partner that they're protecting, defending or whatever. It's also part of that. And the CSO is focused on developing an operational test and training infrastructure for a reason. This, if you think we're just gonna have it, it's good numbers are enough. It never works that way.



And defense alone, as general Chilton said, I mean, one of the things everybody should be taking outta this Ukraine conflict is clause, which is relevant, as well the cidity. The, these defense only approaches are gonna culminate at some point. You can't party blows for that long against a persistent adversary. You must react and overcome. And the TTPs to be able to shift rapidly and find opportunities and exploit them, that's also part of the mindset. So we gotta harden our war fighters, our guardians as well. And they gotta be thinking and training in a way that is second nature. Not something that's a first idea come when the adversary's in your face.

[00:34:05] **Gen Kevin Chilton, USAF (Ret.):** Dave, I wanna pile on what Stacy said as well. Agree with everything Rock said. But yeah, the ground infrastructure is critical to our space capabilities. And I think you need to take a real hard look at where are we single strength? And how do we, how are we gonna back up those capabilities because we are gonna be attacked, whether it's by cyber or kinetic? And I'd use the nuclear deterrent system as a model. I don't know, we need to go to that extreme.

But, when the president gives an order we to use a nuclear weapon, there's not just one path for that order to go out. There's multiple paths on multiple different capable capabilities. Some hard line, some RF, and some many we can't talk about. But the important thing is there's no one single point or even a few that can be taken out and prevent that message from going out. That's probably the ultimate extreme. Somewhere between single string and there, is probably where, our space force needs to be at least thinking about how we're gonna operate it in a degraded ground infrastructure?

And then the last point I'd make and it, I haven't heard it mentioned yet today, really, and that is none of this matters if the services don't buy the user equipment. The Space Force doesn't buy the user equipment. It's the services that buy it. Army, Navy, air Force, Marines need to have updated, capable, flexible for changing software. And capabilities in the future so that, it doesn't just work one way. We can change the software, change the crypto, and get the messages through. That's a responsibility to the other services. And they need to step out and make sure they have the proper user equipment or the space capabilities are for naught.

[00:35:40] **Lt Gen Dave Deptula, USAF (Ret.):** Very good. He... last more questions here, but I do wanna conserve some time for the audience to jump in here. So let's shift to that phase right now. And again, any questions from the audience for our panelists? And I think we got mics floating around. And please identify who you are first, please. Thanks.

[00:36:02] **Steven Jordan Tomaszewski:** Thank you. Steven R. E. Jordan Tomaszewski from the Aerospace Industries Association. Question about commercial protection of commercial space systems. Is space command today currently postured, if directed to protect commercial space systems? And along those lines what is Space Command doing to kind of deepen ties with industry? Thanks.

[00:36:21] **Maj Gen David Miller:** Yes.

[00:36:24] **Audience:** [laughs].

[00:36:24] **Maj Gen David Miller:** So I think we are, I think I think we are, I know we are. We do consider, I mean, it's part of the challenge that we were given and the task given to my boss, directly from the president. And making sure that if directed, we're able to do these things. So it's not only something we gotta prepare for, it's something we gotta actually demonstrate the capability to do.

A number of things so that the command and Space Force has a role in this too. Absolutely has released commercial integration strategy designed to build in options and availability for not just protection, but partnership from the ground up with commercial systems. So we understand from a resiliency perspective what they can offer. Similarly, have a path that's established, rehearsed and nominal for provision of indications and warning if there is a concern that they have.

Our main venue for doing that is out of the combined forces space component command out of Vandenberg Air Force Base and their commercial integration center for the operationalization of that. But we're looking to expand it. And that's been a focus to the commander really for the last year. We see that there is got... no matter how this shakes out in terms of force design and the CSO said the service is working on one. There will always be a role and a necessity for us to have commercial partners as a part of our forces.

And what we are trying to get away from is the crisis happens, and that's the first time someone's called [laughs]. and make sure that they're there. I will say, and it's, obviously some commercial partners want to be more clear about their participation than others. They participate in exercises. They have POCs who are fully clear to the things they need to be cleared to. They understand what capabilities that we have. So I think we are well postured if directed by the secretary to take that.

But I think at the same time we're trying to build in more left of the crisis so that we have normalized that partnership. And clearly established where we can surge capability and support where needed. But at the same time have the intellect as a part of our planning and operational concept development upfront.

Yeah. One in the center over here.

[00:38:28] **Gen Kevin Chilton, USAF (Ret.):** While we're waiting for that, can I ask you a question, Stacy?

[00:38:30] **Ms. Stacy Kubicek:** Of course. [laughs].

[00:38:31] **Gen Kevin Chilton, USAF (Ret.):** I'm not gonna ask you to speak for all of industry, but what is your expectation of the US Space Force and US Space command? Do you expect them to defend your satellites and your ground infrastructure?

[00:38:43] **Ms. Stacy Kubicek:** I think it's a partnership. I think we need to also as industry take a step back and reflect on where can we also help and meet halfway? I don't think it's an all or nothing to be quite honest. I think it's more of how can we harden our systems? What can we drive protection into our systems to actually help to provide the intelligence there as well and meet halfway? If we depend on it, if we depend on one or the other, I don't think we're ever gonna get there, nor are we gonna get there at the speed. You're talking-

... about the speed, right? We're not gonna get there at the speed that we need to by doing that. So I think it's absolutely a partnership where we need to be looking at innovative ways that we can insert things into our assets and our capabilities that we're putting into space. Because we're taking responsibility when we do that as well. So I think it's definitely a two-way street.

[00:39:23] **Gen Kevin Chilton, USAF (Ret.):** Thanks.

[00:39:25] **Maj Gen David Miller:** Yeah, I think that's a good point to clarify. There are levels, so you say protection, everybody thinks like defenders on orbit, probably. There are levels of coordination here that are important. Indications and warning of a cyber concern of one of our industry partners directly impacts the US government in many ways. That may be one way at which we're partnering. And that's the whole purpose of expanding that partnership to many more industry representatives, but also allies and partners candidly.

This is a we problem, not a me problem for US Space command. And I think our approach has been one of recognize the opportunities early. Bake in the solutions and the coordination so that it's ready to go. And don't wait until the crisis occurs before you do it. It's not gonna all be Star Wars or Star Trek protection level one? It's gonna be something else, so-

[00:40:12] **Lt Gen Dave Deptula, USAF (Ret.):** Okay, last question.

[00:40:14] **Gabrielle Tupacio:** Good afternoon, sir, ma'am. Second Lieutenant Gabrielle Tupacio, fresh, bright-eyed young person, as the general said earlier. We've spoken a lot about fostering these relations and we've spoken a lot about fostering these relations with commercial the commercial sector. And I do wonder whether... How are we deepening these relations with other departments such as the Department of State? Since space diplomacy has become this new and niche exciting thing. And I wonder what developments have been made by the Space Force in helping the Department of State in doing so? Thank you.

[00:40:54] **Maj Gen David Miller:** Why's everybody looking at me?

[00:40:55] **Gen Kevin Chilton, USAF (Ret.):** [laughs].

[00:40:55] **Lt Gen Dave Deptula, USAF (Ret.):** [laughs].

[00:40:55] **Gen Kevin Chilton, USAF (Ret.):** I can... I'll give a little history here. I know secretary Frank Rose who I know he worked this problem really hard for his eight years. I believe he was working in the State Department to try to get norms established. Try to get people to agree on norms. And as was mentioned earlier, once you... And we're not there yet, it's a worthy effort to push that through. Because once you have that, as someone mentioned earlier, I believe it as General Saltzman, then you, when someone violates a norm-

[00:41:24] **Maj Gen David Miller:** Yeah.

[00:41:24] **Gen Kevin Chilton, USAF (Ret.):** ... you have the ability to do... Throw a de marshmallow at them, we used to call them. But that's the State Department, sending in a message that, "Hey, you signed up to this, you violated it." And that's, that diplomatic pressure matters.

[00:41:35] **Maj Gen David Miller:** It does.

[00:41:36] **Gen Kevin Chilton, USAF (Ret.):** It really matters. And I'm a big fan of coming to some level of consensus on rules of the road, if you will. In

peace time. Of course, they all go out the window. And as we know in any conflict once the balloon goes up. But I think it's really an important way to help deterrents by holding nations accountable for their behavior in space. And enabling the state department to fulfill their capability to exercise one of the key elements of national power, the die and dime, if you will, diplomacy.

[00:42:06] **Maj Gen David Miller:** Yeah.

[00:42:06] **Ms. Stacy Kubicek:** I'm gonna add to that a little bit. Since you didn't wanna go first, yes I [laughs] I wanna also add, it's a great question that you ask. But the other piece too that I'd like to just encourage to think about is an international piece as well, right? Because then you start adding in all the international capabilities and there is a lot of international focus. Whether it be on cyber capabilities, even the ground capabilities, satellite communication capabilities, and how that's all gonna work. And it's again, getting back to the partnership. It's gonna be a bigger picture that's gonna really make us more effective as we continue to move forward. So just another component of it to think about as well.

[00:42:37] **Maj Gen David Miller:** I know General Burt wants to comment. I gotta say one thing first.

[00:42:40] **Audience:** [laughs].

[00:42:42] **Maj Gen David Miller:** [laughs]. Thought that she was gonna get mad at me.

[00:42:43] **Lt Gen DeAnna Burt:** [laughs].

[00:42:43] **Maj Gen David Miller:** So I think it's good. The tenets are responsible behavior that the secretary released last month are a start. Those were coordinated with the State Department. I had the opportunity to be in an event with the UN Ambassador. She is tracking these personally. General Burt will talk about some of the allied efforts to push those through. You gotta think about something, just in the last three years three plus now that the Space Force has been in place, we have seen... Depending on whether it's an independent service, an Air Force that now has a dedicated space arm within it, or a joint command established within that partner nation. We are in the teens now of nations and partners who are working through how they're going to organize in order to not just protect and defend, but to deliver capability to their forces as part of a unit.

Every one of those pieces we're partnered right now for access to some capability space domain awareness capability from the COCOM that's present in the European theater. We gotta work through NATO to get that done. And the assistant Secretary of State and that team actually works those partnerships for us. In addition to the ambassadors at the local level. I think we're getting to a place where we're normalizing that. We have a political advisor who constantly has a update back to the team on where we are on both our planning to make sure that we have the access we need with our allies of partners. The operations, that the coalition is strong. And we have a multinational operation right now that we execute. And then simultaneously are setting up for the future for where we're heading. I think from a COCOM perspective, the integration is very good.

I do think we are in a place where because of the tenets are responsible behavior, the advocacy we've received from certain number of allies as a result of US leadership, and the establishment of those services. I think you're gonna start to see a bow wave form of like-minded nations who recognize the shift that these nations, it's international defense strategy. The PRC and the Russians wanna make the international order. And the value of norms and tenants of responsible behavior to preserving that international order. It's not just about war fighting, it's more about escalation management and preventing miscalculation. So I think it's good. As service, I'll let General Burt talk about.

[00:44:45] **Lt Gen DeAnna Burt:** No, that's a great question. So what I would say is one we just general Saltzman very similarly to General Dickinson just got his own department of state political advisor here in the last four months. So she's on staff and working. So that's been a great add to the staff. Secondly, we do have Guardians Blue tapers sitting in State Department working these norms of behavior and engaging. The third piece I would say is this discussion of we had Shriver war game last week and we went to the... CSO talked to you about the coalition out brief. State Department was there for the entire out brief and talked about all the efforts they're working towards in the norms of behavior.

The United Kingdom is leading those efforts in the United Nations on behalf of all the like-minded nations that were there at Shriver last week. A great initiative. As we stand up service components, and you heard earlier the chief say that we've stood them up in Endo, Paycom US forces Korea, and in Centcom. You now will also have that security cooperation that's happening in the COCOM with a space guardian working with the, the folks on the joint staffs at each of the combatant commands to do that security cooperation for space. And to continue to improve those norms for military sales. Any kind of operations or sharing agreements we would have with other countries.

So I think to your point, absolutely norms are important. How we get after involving ourselves with State Department and making sure this is a whole of government. And how General Miller mentioned earlier this is a whole of military. It's a whole of government as well, and State Department is critical in that.