AA – Ep. 190 - Orbital Warfare Transcript

Heather "Lucky" Penney: [00:00:00] Welcome to the Aerospace Advantage Podcast brought to you by PenFed. I'm your host, Heather "Lucky" Penney. Here on the Aerospace Advantage, we speak with leaders in the DoD, industry, and other subject matter experts to explore the intersection of strategy, operational concepts, technology, and policy when it comes to air and space power.

So if you like learning about aerospace power, you're in the right place. To our regular listeners, welcome back. And if it's your first time here, thank you so much for joining us. As a reminder, if you like what you're hearing today, do us a favor and follow our show. Please give us a "like" and leave a comment so that we can keep charting the trajectories that matter the most to you.

And for our listeners, at the time of this recording, Lieutenant Colonel Baycheck was the commander of the 98th Space Range Squadron. has since successfully completed that assignment and he is now attending the Army War College as a student and continuing to rock it up in his career.

Heather "Lucky" Penney: Today, we're talking orbital warfare. And this isn't science fiction. The threats are operational and they're growing. [00:01:00] From satellites with robotic arms, nesting doll ASATs, and even concern over nuclear ASATs, we're seeing Russia and China expand their suite of weapon systems, well beyond terrestrial based jammers, lasers, or direct ascent ASAT missiles, and even cyber systems.

Bottom line, this is a seismic shift in the operational environment, and we've got to adapt fast. All of these threats are aimed at one objective, erasing the U. S. military advantage in space. Many believe this is where we'll see the first shots fired in the next major fight. While others point to ongoing aggression and gray zone competition that we're now in, and the aggression and response that's already happening, it's critical that we understand orbital warfare threats and how to mitigate them.

But we also need to work on the training, which comes down to having accurate threat representation, and creating an environment where guardians can hone their skills and develop the tactics, techniques, and procedures necessary to

prevail. We do this for every other domain. And now we're doing it for [00:02:00] space.

So, given that context, we're really excited to welcome to the Aerospace Advantage two Guardians who are experts in orbital warfare. First, we have Lieutenant Colonel Jessica "Thumper" Getrost, commander of the 57th Space Aggressor Squadron. She leads the team replicating on orbit threat systems.

Thumper, welcome to the Aerospace Advantage.

Lt Col Jessica "Thumper" Getrost: Thank you, Lucky. I'm happy to be here.

Heather "Lucky" Penney: We're also thrilled to have Lt Col Matt "BC" Bejcek, who's the commander of the 98th Space Range Squadron. He leads the orbital warfare range element of the National Space Test and Training Complex, the NSTTC.

BC, welcome.

Lt Col Matthew D Bejcek: Thanks, Lucky. Happy to be here.

Heather "Lucky" Penney: And finally, we're joined by our in house space expert, Charles Galbreath. Welcome back, Charles.

Charles Galbreath: Thanks, Lucky. It's great to be back. And really, it's, a great opportunity for us to talk about what is really an important topic that has been hidden in the shadows for too many years.

And so the ability to actually have an open discussion about orbital warfare, why important and what sort of capabilities we need to prepare our Guardians for a fight in [00:03:00] space is absolutely essential.

Heather "Lucky" Penney: I completely agree. Understanding space capabilities, orbital warfare, and what you do is crucial, not only for policymakers to be informed so they can make the right decisions, but so that warfighters understand and can trust how their partners in space, their Guardians, are going to be able to deliver.

So, Thumper, let's start with you. Can you help level set what orbital warfare really means? I'm sure there's some of the audience picturing X Wing and TIE fighters, I mean, myself included, and sign me up. But in reality, it's a lot less flashy, but far more dangerous.

Lt Col Jessica "Thumper" Getrost: Absolutely, so orbital warfare is a lot more than just 2 vehicles maneuvering around each other.

The space power discipline is for on orbit maneuvers, but to execute offensive and defensive fires really to preserve our freedom of action in space. What I really want to emphasize there is that potential adversaries want to negate our space capabilities. Whether it's on orbit, threats from the ground, non kinetic and kinetic. Our Guardians have to train and develop [00:04:00] tactics to combat those adversarial threats.

And it can be complicated because when we're actually on orbit, you don't necessarily know where the adversary is, where they're headed, or you do know, but there's a delay in getting that information to plan out your response and your engagement.

So, very complicated and you have to factor in a lot more than just the orbital mechanics of 2 vehicles moving around each other.

Heather "Lucky" Penney: And so that's probably why space domain awareness is so important to space superiority.

Charles Galbreath: Yeah, absolutely. Heather, the foundational element of space domain awareness, understanding where we are, understanding where the adversary is, and what they're doing is absolutely essential if we're going to maintain our advantage in space. In order to continue to deliver the effects that conventional forces, the army, navy, air force, marines, all rely on. And so when we talk about orbital warfare, Thumper's absolutely right that it's not just 1v1 that we need to consider, but how these threat systems could impact our entire constellation [00:05:00] and the effects that they provide to our warfighters on the ground and in the air and at sea.

And so, we can imagine something like the Russian ASAT that potentially has a kinetic kill vehicle at the end of it near one of our high value assets in low earth orbit. As it moves closer, we may need to move away to ensure that we have some reaction time in order to mitigate any potential attack.

In GEO it's the same thing. We know that the Chinese have a robotic arm satellite, and they've demonstrated the ability to move a satellite from one orbit to another. With that capability how do we maintain our distance? How do we maintain our awareness of what it's doing? And as satellites begin to mesh with one another and communicate from LEO to GEO or across multiple platforms and a laser communications network, for example.

Maintaining our ability to know where the adversary is, operate around it, and ensure that we continue to provide the capabilities that so many people rely on, is absolutely [00:06:00] essential. And so, having the Space Aggressors, the orbital warfare space aggressors, and the range with which to train our assets and our people on, is absolutely critical.

Heather "Lucky" Penney: Because that's the only way that we're really going to be able to develop the skills and the expertise and get the repetitions that our Guardians need to be able to maintain space superiority.

Charles Galbreath: Absolutely.

Heather "Lucky" Penney: So, BC, our audience is probably familiar with the Nellis range, but as we're discussing how we're going to train and exercise so that we have the skills to be able to maintain that domain superiority, how does a range work in space?

Is it a physical location? Is it totally virtual? We've heard General Saltzman talk about this being a digital force, or is it somehow a mix of both?

Lt Col Matthew D Bejcek: Yeah, that's a great question, Lucky. As I look at the orbital range mission set, I like to use Nellis as a good exemplar because there's actually a lot of similarities. When you look at Nellis and the national test and training range, physical location, located in Las Vegas, right?

And in that physical location, it [00:07:00] gives you a way to have safe and controlled, test and training activities. A lot of similarity in terms of bounds and a control area of what objects and vehicles you want to be in that range space. And what do you want to keep out whether for safety or security reasons. To enable that you have a number of sensors and instrumentation to understand what's happening in the range at any given time. You've got certain rules and policies and procedures to execute activity within that range.

And that's all well understood and the training audience across the Air Force and the Joint Force go there on a routine basis to build their capability. Orbital range, in the physical sense, is not a lot different. We have a physical space that we'll establish, on orbit.

It'll move where the mission vehicles that are gonna do the test or training activity are at any given time. We set up control bounds similar to that, and then we have a number of sensors and sensor suites that detect and monitor what's going on in that range volume, so we can make safety calls, security calls, and

make sure we get vital test data [00:08:00] to inform models and other ground based simulations. Which we can get multiple repetitions for training audiences because of the expense and cost it takes to do something on orbit.

Heather "Lucky" Penney: So the orbital range as opposed to the physical range would be primarily virtual simulation of players, and the orbital range is identified assets zipping around the earth That are playing with ground based assets? Am I understanding this correctly, because it's really hard to wrap your noggin around a physical space, which from an airman's perspective, is the airspace over a fixed ground location. You're not actually stopping the satellites as they're zipping around the earth.

Lt Col Matthew D Bejcek: That's correct. So for physical range, there's a GEO regime, geosynchronous regimes are defined by clear orbital parameters. So if you can imagine a fixed spot in space at the geosynchronous region, about 22, 000 miles [00:09:00] away. We can set up longitudinal bounds, altitude bounds associated with that, and create a three dimensional space where vehicles can operate and maneuver, as Thumper was describing as part of our orbital warfare tactics and techniques.

So we set up that space, and we set up that control volume that gives us a control mechanism of what vehicles we want in that physical space. And what vehicles we want to keep out of that physical space. To maintain awareness, similar to the Nellis ranges, we need a suite of ground based centers to be able to observe that range during a key test activity or during a key training activity. Collect that data and then feed it into an operation center where we're able to use that in near real time and make decisions related to the safety and security and the conduct of the test or training activity on that range.

It does move over time, as you stated, which creates some complications and forces our planners to be creative and intuitive about how on orbit [00:10:00] operations go. That's how we manifest and manage on orbit physical range operations for tests and training. As we do activity on that range, It is expensive and there are things that we may or may not want once you have happened on that range, or be seen on that range.

So we'll collect data and then we'll feed that into a virtual environment. And then we can get a multi repetition, test or training, venues associated with that data we collect, to be able to enable understanding our system performance or giving our operators and the warfighters opportunities to advance their craft in the virtual environment, since it's so difficult and expensive to do on orbit all the time.

Heather "Lucky" Penney: Yeah, and I would imagine that the virtual training, which you're doing in total simulation, once you've informed that, those activities with what you've actually done in space in the physical orbital range, is actually a huge advantage for you because you don't have to use up [00:11:00] limited fuels.

You don't have to actually move things around. And a lot like what we're seeing in the air domain, there are capabilities that we don't want to reveal to the adversaries.

Lt Col Matthew D Bejcek: That is very true. Although I will, balance that out that there is a strong need and a desire to do things on orbit because real physics, real systems, come into play not always have a guaranteed contact with the vehicle to be able to get the uploaded commands and sometimes a simulated and virtual environment don't allow that. And so we find ourselves needing both and balancing a constant tension between what we do on orbit versus what we do in a virtual or synthetic environment.

Heather "Lucky" Penney: Well, any airman can relate to that because we know that simulation makes us better and improves our performance, but really what proves our capabilities is when we get the jet airborne. So from both of your descriptions, it sounds like your squadrons really require some specific talents and skills. So what does it take to be a Space Range Operator and an Orbital Warfare Specialist?[00:12:00]

Lt Col Jessica "Thumper" Getrost: Yeah, so Guardians already have a pretty high bar for coming into the Space Force and it's going to get increasingly specialized and robust from a ground level standpoint, as the service, develops our training programs. Every person in my squadron, with a couple of exceptions, are on their second tour. They're all hand selected, every single one of them.

They're not all Oracle Warfare backgrounds. They come from various backgrounds, which we actually use as a strength, as many of our different units in the Space Force require some sort of orbital warfare expertise to really get after their training and tactics development against threats they may see.

So we pull them from various backgrounds and they're all top performers from their previous units that can apply orbital mechanics, tactics, and knowledge of the adversary in order for us to be able to train blue. We're a [00:13:00] small team, an elite team, but we're small by design.

Lt Col Matthew D Bejcek: I love this question, Lucky.

A lot of my thoughts echo what Thumper just laid out. There's some of the obvious answers in terms of technical background, specified skill set in astrodynamics, orbital mechanics, rendezvous and proximity operations to understand how maneuver happens on orbit. As I look at it there's a number of values that we've honed in on that really start to define characterize what we need our operators to be.

Pursuit of being a mission expert and a domain expert. Being able to have the initiative to lead with mission commands and go out execute the job in a fairly nebulous and ambiguous defined operating environment at some times. Then overall a fundamental attitude that wants to win and loathes defeat, right?

a OW (Orbital in itself is a naturally competitive mission area in the sense that, by having maneuvering forces, Red versus Blue, a thinking [00:14:00] adversary is always going to be on the other end that's trying to counteract your activity. You need somebody with that competitive spirit and the attitude and the tenacity to want to overcome that and prevail when they get into the arena, or they have to take this into real life.

So, I think those traits, really define and encapsulate what we need and I'll say to echo Thumper's point, we also have a small team, but I've got a lot of that creativity, tenacity and attitude on there, that are driving forward and trying to make this mission a success.

Heather "Lucky" Penney: That's awesome to hear.

I remember what it was like, strapping on the jet and going into bad guy land and fights on and how you feel your teeth get sharp and your blood get hot. And it sounds like you've got the same spirit in your war fighters. So let's talk a little bit about the role of intelligence in your work.

We always need to know what the capabilities of Red are, but from an aggressor perspective, Thumper, I imagine you're very closely tied in with what we know about our, adversary capabilities and tactics.

Lt Col Jessica "Thumper" Getrost: Absolutely. So from an aggressor [00:15:00] standpoint, our core mission centers on know, teach, and replicate.

And so when we say no, we really do mean an understanding of the adversary's capabilities. Their weapons capabilities, what their command and control looks

like, their doctrine, the tactics that we've seen them employed. All of that falls underneath "know." And we can't really do our teach and replicate missions without that linchpin.

I will say, conversely, if we are really good at the "know" piece, but then we don't actually push that out through the teach and replicate and we wind up being just experts in our field, but don't actually have the effect of training Blue what we've learned, then we're ineffective as well. So, I have a very involved and talented intelligence flight that is really embedded with a lot of our IC partners.

In getting familiar with constantly asking questions and for more [00:16:00] information and analysis, on what the adversary could be able to do or likely to do. And then they're very integrated, our intelligence flight is very integrated with our operators. And so we send our operators and our intelligence personnel out on missions together routinely. It makes a better product, it makes us better aggressors, and it helps us train Blue better.

Charles Galbreath: Thanks, Thumper. So, I'm really curious, how do you organize within the Space Force the orbital warfare efforts? I mean, years ago, when we had the Space Warfare Center, there was the 25th Space Range and the 527th Space Aggressor Squadron, and the 17th Test Squadron, all within the 595th Space Group.

Uh, and we were able to leverage the synergies of those organizations by being under that one umbrella, but over time, we kind of broke that apart. Space Warfare Center, disbanded. Some of the assets went to Air Combat Command. But now under the Space Training and Readiness Command, it sounds like we're kind of putting the band [00:17:00] back together and creating some new synergies.

So could you talk a little bit about how you're organizing to improve the synergies of your two units? And what that means for the range and aggressor capabilities beyond single squadrons?

Lt Col Matthew D Bejcek: Yeah, Charles, I'll try to take a stab at this one. It's an interesting paradigm we're stepping in and I'll just, I'll open with saying that there's always going to be opportunity to continue to evolve and improve and change the organizations, to help us continue to optimize.

And we're always looking for those opportunities to do that. I do say with the establishment of STARCOM and then fundamentally Delta 11, I think we're

starting to get the right competencies aligned together. So we call ourselves "The Radicals" in Delta 11. And so the reason that was derived was from the range and aggressor delta.

'Cause if you look at it, you have EW, have cyber, and you have the ranges and aggressors all in one Delta to provide this, this [00:18:00] mission setting capability to the service. And if you think about it, that's fairly unique construct for the Space Force that you have one Delta, where you get all of these competencies in one place.

And so we're at a nexus point for a lot of the SpOC units and operational elements that come together, that we get to see a little bit of it all, to include the joint and coalition aspects of it as well. So that said, there's the established organizations of our sister 25th and 527th, the electromagnetic spectrum side of the range and aggressor that make that up.

And then we're quickly growing, but we're probably fairly small for where we need to be in terms of the orbital range and aggressor side of things, to really present that capability. But I think we're on the right footing that we've aligned the functions together, to help go out and meet our test and training audiences head on.

Lt Col Jessica "Thumper" Getrost: Yeah, I agree with everything that you just said, BC. I'd like to add that, you know, from a perspective of someone who was in the aggressor squadron, when we had both EW and OW [00:19:00] under the same squadron, and we were in a different chain of command than the range, it had a lot of challenges from both sides of that.

Our current construct lets us develop expert in our discipline, within our squadron, and stay laser focused on our mission area. But it also allows us being under the same Delta to collaborate with our range partners much more efficiently and that way it aids us in moving towards integration and combined arms.

Heather "Lucky" Penney: So Thumper and BC, what you're doing, Thumper, you're bringing together your aggressors and your squadron and BC, you've got the folks that manage your training ranges in your squadron. That really is providing an incredible capability to ensure that our Guardians, really have that knowledge and that expertise to be able to go and fight the fight. But you know, you're conducting these tests, training events, and exercises. How do you de conflict with other spacecraft? You know unlike other domains, we're able to have the awareness what aircraft [00:20:00] are flying, where in some particular

air spaces, like restricted ranges are prohibited for other aircraft. So how do you manage the mix of real world spacecraft doing their JOB in orbit and what you're trying to do within the range?

Lt Col Matthew D Bejcek: Great question, Lucky. I really like conceptualizing how we think about this. First part to answer that is we do a lot of our tests and training activity away from congested areas where we know there's vehicles operating or there's going to be potential safety or security risk associated with the activity on the range.

Leading up to that, we're also reliant on the Space Surveillance Network and Space Domain Awareness data to just help us build a baseline knowledge of what's going to be in that operating area when we're doing a test or training activity, coordinating that. As I discussed earlier, we set up a physical range volume to help us control that but like you mentioned, we don't have air traffic control feeds and I have no means of saying [00:21:00] to other users or other operators in the domain, "don't come into my space." And so it's really it's almost an inverse control relationship. I set up the control bound, set up a space so I understand where we're going to be operating.

And then if something moves into that, then we will direct and coordinate the cessation of activities on the range until the safety or security hazard had moved along. So, really that's how we're looking at managing that. And that's based off a whole subset of sensor capabilities that we leverage on the range either through partnerships or dedicated range capabilities that we're purchasing to be purpose built for our operation.

Heather "Lucky" Penney: So, you're basically just knocking off the fight if transgressors moving through the 3 dimensional space, that you're playing in?

Lt Col Matthew D Bejcek: Correct. There's a little bit of an assessment of is it going to be a concern or not? Right? There might be range opportunities where it doesn't become a concern, even if it does cross into the range volume, or it might lead into a severe safety thing that we would have to [00:22:00] address.

But fundamentally, you're right. we're knocking it off on our end, rather than directing external...

Charles Galbreath: It reminds me of, you know, when you're a kid playing in the street. And someone yells "car game off," and everybody runs to the sidewalk and then say, "okay, game on." It sounds kind of like that.

Lt Col Matthew D Bejcek: That's a great analogy, Charles.

Charles Galbreath: So, Thumper, anything else to add to that discussion about responsible activities in space and how you work with the other actors that are in the space domain?

Lt Col Jessica "Thumper" Getrost: So a lot of what we do, especially for on orbit requires advanced plans. And that's why this partnership with the OW range is so vital because we need to have the ability to really look through the scenario and what we're, what we're looking at and establish those safety parameters before we actually go live.

Charles Galbreath: You know, in listening to both of you talk about this, it really strikes me that we're taking every step and precaution we can to make sure that we are responsible actors in the space domain [00:23:00] and that even when we're, you know, demonstrating offensive and defensive capabilities, we're doing it in a safe and responsible manner, which cannot be said of our potential adversaries.

You know it also, to Heather's point about, um, you're in space and people can see you and I know earlier we talked about how that drives some activities to the virtual because we don't want adversaries to see. It also creates an opportunity for us to demonstrate capabilities and you know we test our ICBMs and we prove that those capabilities are still reliable and assured and we do that for a reason, is to send a message for adversaries, that we're ready. And so I think in many ways we might be able to do the same thing in space.

Heather "Lucky" Penney: Charles. Exactly. That's the reveal conceal competition, right? Where we show our adversaries some of what we're capable of, but we don't show them everything.

That's crucial to having a deterrent effect because they see how good we are at certain things and they know we have something secret and super special, but they [00:24:00] don't know what that is. Inserts a lot of uncertainty into their decision calculus and can be a deterrent effect.

Charles Galbreath: So last year, the Space Force, rolled out a new concept called Space Force Generation or SPACE4GEN Model.

This is where the systems and units who perform the mission 24/7, 365 days a year, have a predictable schedule for training, generation and presentation of

forces to combatant commanders. How do you roll into, your efforts, for orbital warfare into this concept of Space Force Generation?

Lt Col Jessica "Thumper" Getrost: Yeah, no, a lot of Space Force Generation is still being determined and finalized and what will wind up being the final approved venues and the timing and tempo of those, but from an aggressor standpoint, what we're doing is, supporting a bunch of different sorts of events that can have, space force generation ties.

So, I'll give you a few examples. You have a tabletop, [00:25:00] scenario development, ongoing right now that the aggressors are a part of. You also have some of the classic, Space Force exercises like Space Flag. We've also supported the skies series from an exercise standpoint. And then I want to highlight, a more recent accomplishment where we accepted on orbit training activities for Delta 9, specifically 1 SOPS (1st Space Operations Squadron), via a Scarlet Star.

So the Star Series are opportunities for aggressors, with their range counterparts, to lead SOP units, through a training event, live. So recently we just, conducted one with a GSAP vehicle, where we were able to help them have a training event for one of their crews. And also go through some tactics development and training live on orbit. Which is a very, significant accomplishment for taking a GSAP and doing those sorts of [00:26:00] activities actually on orbit.

Charles Galbreath: And for our audience, GSAP is Geosynchronous Space Situational Awareness Program. Which is a satellite constellation that orbits around the GEO belt and monitors activities to make sure we know where the threats are and making sure that our blue assets and friendly assets are functioning like they're supposed to.

Is that right?

Lt Col Jessica "Thumper" Getrost: Yes, that's correct.

Lt Col Matthew D Bejcek: Yeah, Charles, I'll piggyback on this conversation. A lot of the early work for the range has been focused on supporting discrete test events. Which drives specific data collection requirements at certain times to help understand system performance and then be able to characterize that. And understand how well a system is expected to perform its assigned operational mission.

However, we recognize the impending tidal wave of phase 4 generation requirements. And we're actively working to posture the range to be able to support those type of things. Things like the Scarlet Stars series that Thumper mentioned are key exemplar of what [00:27:00] we think that looks like.

And it's probably going to have to scale over the years as SPOC4GEN gains leg momentum and maturity and really is used as a readiness generating event for SPOC units.

Charles Galbreath: So can you help clarify for me, when you do something like the Scarlet Star, these training events, you mentioned you're using GSAP.

So is it a one versus one sort of thing, or is it like Thumper talked about earlier, where it's kind of a multi- Satellite engagement sort of training exercise.

Lt Col Jessica "Thumper" Getrost: For the most recent Scarlet Star, we did use one GSTAT vehicle, and then we also used a vehicle that was owned by the range in order for them to have a threat surrogate, the training audience to have a threat surrogate to model against. And to plan against for their maneuvers.

Lt Col Matthew D Bejcek: Because as the service grows Charles and operating environment becomes more complex, I think we're going to start seeing logical [00:28:00] growth into the large scale synchronized and integrated events to be able to bring forces and capabilities together. But in these early days, we're looking at the 1V1 for sure.

Lt Col Jessica "Thumper" Getrost: And I'd like to emphasize that it's early days, yes, for live activities. We are looking at more complicated scenarios that expand beyond the 1V1 when we're talking about our virtual, training events.

Heather "Lucky" Penney: BC, you mentioned integrated events, but let's expand the envelope there because being able to exercise space capabilities with joint and coalition partners is really important to demonstrating the rubber meeting the road, right?

Joint exercises, one of the best ways that you can employ and test these cross domain effects. So this is where we increase familiarization and confidence with our joint counterparts. Airmen, soldiers, sailors, marine. Actually believing that space is going to be able to do what they expect it to do.

And even more. So what types of exercises have you integrated orbital warfare into with [00:29:00] more conventional capabilities? And what are you learning?

Lt Col Jessica "Thumper" Getrost: Yeah, Lucky, I'll start with that one. So I'll give you a really good example, in the Neptune series. So, for a joint exercise to really start incorporating space, one of the things that really needs to happen is that the training audiences that they've already been their training and exercise environment around, IDs, their space dependency.

So, in 23, we had one of OW aggressors, out with the Neptune team for exercise. And worked through developing a consequence matrix for them. What happens if there is a specific space effect during the exercise, and how does that affect the other, the other trainees. And the whole of the exercise campaign, really.

Then we moved from there where we were really just developing their, helping them develop their consequence matrix into an actual OW dynamic fly out in a stem environment [00:30:00] and having that impact the rest the exercise. So the results of the space simulated exercise wound up feeding into the rest of the exercise and presenting a more holistic and integrated and accurate, frankly, presentation of what our trainees and our joint force could wind up seeing, in the real world.

Lt Col Matthew D Bejcek: From the range perspective, Lucky, Thumper's team is obviously way more invested and spend a lot more time in the exercise arena. Building the range for a live environment, Recognize the importance and the opportunities are there, and so starting to dip our toe into it.

We are a small unit and still growing. And so, as we're looking to do that, we have to be prudent with our resources and our people. So, I'm looking at key events, like Neptune and Scarlet as 1st, integration opportunities to try and bring some of these activities in the live into those events that [00:31:00] add an element of realism and specificity for the users and the joint warfighters associated with this.

Heather "Lucky" Penney: Thank you. It's hugely important to be able to have your participation in these joint operations and exercises because from the other perspective, whether or not it's airman, soldier, sailor, marine. Knowing and interacting with, our guardians and seeing what their capabilities are and also what might happen if we don't have space is a crucial component of learning how to really integrate those operations.

So what plans for future growth and integration do you have? I mean, are you even looking at, for example, coalition operations?

Lt Col Jessica "Thumper" Getrost: Absolutely, Lucky. So we're looking at increasing our integration with joint exercises in a prioritized manner. But we've also been leaning into those, coalition events as well.

Some of them are our teach missions. Right now, where we, it's an exchange of information, getting down even to the basic levels of do we use the right terms to describe orbital warfare? What does your C2 look like compared [00:32:00] to ours? But we've also started, this last year participating in some events like Aster X.

That's, France's premier space exercise. So, we sent a team from the 57th, out to, Aster X, where there were 17 countries participating, and it was the first time that particular exercise had an orbital warfare vignette for folks to train against. So, that was a pretty significant accomplishment and a step towards integration, and we are looking for additional opportunities for that in the future.

Lt Col Matthew D Bejcek: Now, I will say that as the range we are interested in things like further joint and coalition exercises, just given the nature of this mission area and given the demand signal. Probably a number of discussions and high level agreements that need to come into place to bring live capabilities together and share these resources that we make available.

Heather "Lucky" Penney: If we've learned anything from recent operations, whether it's Ukraine or Israel or other hot spots around the globe, it's that we really can't do [00:33:00] anything if we don't have, Space Guardians there fighting the fight, with us. And as we begin to integrate more into exercises and events, I think the demand signal for you will only go up.

And this is going to be my plug for the Space Force. We need to make sure that you've got the resources that you need to be able to develop and field the capabilities that you need, as well as develop and field and grow with the Guardians that you need as well. So thank you so much for this insightful and fascinating conversation.

Charles, thank you so much for bringing BC and Thumper to us.

Charles Galbreath: It was great to have them here and thank you both for your incredible insight. Really enjoyed this discussion.

Lt Col Matthew D Bejcek: Thank you. Lucky. Thank you, Charles. It was great to be on.

Lt Col Jessica "Thumper" Getrost: Thank you very much for having us.

Heather "Lucky" Penney: With that, I'd like to extend a big thank you to our guests for joining in today's discussion.

I'd also like to extend a big thank you to you, our listeners, for your continued support and for tuning into today's show. If you like what today, don't forget to hit that like and follow or subscribe to the Aerospace Advantage. You can also leave a [00:34:00] comment to let us know what you think about show or areas you would like us to explore further.

As always, you can join in on the conversation by following the Mitchell Institute on Twitter, Instagram, Facebook, or LinkedIn. And you can always find us at Mitchell aerospace power. org. Thanks again for joining us and have a great aerospace power kind day. See next time.