2024 Air and Space Power Conference

Transcript – Keynote Address

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CHANCE SALTZMAN: Keep the applause going, it makes it easier for me to transition. Thank you. Good day, mates. This is my first time in Australia and I must say, it is fair dinkum amazing. In fact, after my breakie, I wanted to chuck a sickie and grab the mozzie spray and head to the bush. (LAUGHTER) The blokes on the team were running around like a headless chook and said I would be rude to sit in the bush like a bludger. (LAUGHTER)

My sincerest apologies, if I got any of that wrong, I must admit, as an American, my Canadian is passable, my British is getting better but I need work on my Australian. Needless to say I am extremely excited to be here. I would like to begin my remarks by first acknowledging the traditional custodians of the land on which we meet and pay my respects to the elders past, present and emerging. I extend that respect to the Aboriginal and Torres Strait Islander peoples here today.

Group Captain Sleeman, I think you were making some of that stuff up, it sounds far better than reality but it is honoured to be recognised by a Sleeman. A few short years ago, there was another named Sleeman, Air Commodore. Where are you, so everybody can make fun of you? In 2020, we were stationed together when I was the Deputy of Air Force's Central Command. 2020 was a dangerous and dynamic time in the Middle East. He was a terrific airman, leader, wingman and he served as a shining example of coalition partnership. It is great to see you again, my friend, and I think it goes to show how tight this relationship is between the US and Australia.

I would like to thank the Air and Space Power Centre for putting this forum on. It is my experience, home and abroad, that these events are critical because this is where our most important conversations happen. Just talking to people, we get the chance to stop and think about what it means to be an air and space

power, be a coalition and work together and those kinds of collaborations in the margins of these conferences are just vital. Thank you so much for putting that together. I am looking forward to these conversations.

Yesterday, May 8 was an important anniversary for the US, Australia and allies around the world. It was Victory in Europe day, known as VE Day. It commits the end of Nazi Germany to the allied forces in 1945. The news was met with spontaneous celebrations around the world, no more here so than here in Australia. By 11 o'clock that night, some 50,000 Aussies were at Kings Cross singing and dancing in the streets. A few months later, the war came to an end in the Pacific thanks to the strength, partnerships with freedom-loving nations around the world, the US, Australia and allies secured an end to World War II. Yesterday, I had the chance, it was an honour to visit the Australian War Memorial, where I was reminded that our partnership extend back further than World War II. A great example of the enduring bond between our nations dates to the Battle of Fromelles. The successful attack by the Australian Army and US Army Infantry, supported by British tanks, against German positions in and around northern France during World War I. The attack was planned and conducted, the brilliant commander of the Australian Corps and the use of combined arms changed the face of warfare across the globe. His innovative strategy had a transformative impact on military strategy and warfare, maximising the strength of each branch of the military while compensating for their weaknesses, resulting in a more effective and versatile fighting force. The general saw the value of partners. This was the first time in history that US army troops were commanded operationally by non-American officers. Apparently he encouraged the Americans by brilliantly scheduling the battle to start on July 4. By the end of the war he said "Success is not measured by how high you climb but by how many people you bring with you". I can think of no better vision, especially on this day of great power competition.

I titled my speech today Deterrence Down Under because the US and Australia share a strong interest in maintaining freedom, peaceful commerce in the Pacific and around the globe. Freedom of navigation, other lawful uses of sea and now space, all contribute to successful deterrence in the region and across the globe. Today, the space domain is radically different than when I started

flying satellites decades ago. It is radically different than four years ago, when the US Space Force was established. It has become congested because of more launches, more satellites, more debris and more players in the space domain. It has become contested because we see an incredibly sophisticated array of threats in and to the domain. China has a sensor shooter kill web that creates an unacceptable risk to our forward-deployed forces and allies, particularly here in the Pacific. This rising congestion and competition in the domain has led to a growing risk to our continued access to and operations within space.

To address this risk, the United States Space Force has been charged with securing the space domain. To prepare and control it with force if necessary as part of a joint force, a coalition force, whilst protecting the security and prosperity that all our nations derive from space. Joint and coalition force operations depend on space capabilities and protection from space-enabled attacks and thus our space forces an integral part of the joint and coalition team. The Space Force mission statement, to secure our nation's interest in, from and to space, reflects our purpose and identity as guardians. This mission statement is the first step in creating what I call the foundational service framework, defining the why of the Space Force. It helps clarify what we have been tasked to do each and every day. It also touches on the core functions of the Space Force. The core functions are what a service does. Every military service, regardless of the domain, must field forces capable of three core operational activities. Access the domain, control the domain and exploit the domain.

For the Space Force, space superiority is the first core function and it is the in space aspect of the mission statement. A service must be able to control its domain to be able to exploit the advantages it offers. It is the ability to contest and, when necessary, control the space domain at a time and place of our choosing, protect our space capabilities and deny an adversary access to theirs. This is true for all services, each service must be able to control its domain. Air superiority, sea control, land dominance, now space superiority. The ability to contest a domain with military force is the formative purpose of any service. Once a service has control of its domain it can perform other missions, for example, as

this audience well knows, the air force has - once the air force has control of the air domain, it can perform close air support, ISR, mobility.

When we exploit the domain, we provide global mission operations for the Space Force. This is our second core function or the from space aspect we talk about in the mission statement. Global mission operations enable joint and coalition forces to integrate functions across all domains on a global scale. This is an important distinction inside the US's Department of Defence, only the US Space Force can provide the truly world-wide capabilities our forces absolutely require as they defend US allied interests around the world. Without satellite communication, without precision navigation and timing provided by the US Space Force, our joint force is unable to project power effectively.

Finally, a service must be able to access its domain, especially during a conflict. The ability to get to the domain and leverage all the domains in pursuit of military objectives is a prerequisite to success, whether we call this deployment sortie generation, fleet operations, it is crucial that we are able to do it, do it effectively, do it promptly. Taken together, the mission statement in our core functions provide our guardians with shared purpose and a common understanding of our overall strategy. It allows us, as a service, to ensure the safety, stability, security and even long-term sustainability of the domain for all who wish to use it.

The how behind the foundational service framework is rooted in our theory of success called competitive endurance. A theory of success provides a service with shared purpose, a common understanding of overall strategy towards the objective. It defines organising principles, it clarifies the assumptions, it helps identify the equipment needed, the training needed to be effective. A theory of success gives you something to point to, a guiding light, a true north if you will, that says this is what matters most for the mission we are charged to perform. A theory of success is your answer to how your service plans to execute its missions. Without such a theory, the service cannot effectively and efficiently make all the necessary decisions, perform the key activities that must be accomplished to achieve the mission. In short, a theory of success provides an answer to the question of how, to get the mission done. That theory of success

informs your future concepts which informs requirements and technology investments which become procured systems, organised into forces where we can do the work of tactics. This leads us back to the Space Force and our need for a theory of success to get the foundational strategy right. For the US Space Force a theory of success is necessary to orchestrate our efforts in pursuit of space superiority.

Competitive endurance in two words encapsulates our approach as it aims our ability to achieve space superiority, when necessary, whilst maintaining the safety, security, stability and long-term sustainability of the space domain. The approach has three core tenants. First, avoid operational surprise. Second, deny first mover advantage in space and, third, responsible counter-space campaigning. Avoiding operational surprise in space requires comprehensive and actionable space domain awareness. By that, I mean the ability to make sure we understand what is happening in space and identify when behaviours become irresponsible, even hostile. This requires an enhanced level of space domain awareness. We are investing in new sensors, advanced data management, decision support tools and, most importantly, stronger partnerships with allies around the world.

We need to have more persistent sensor coverage to fully see our domain, so we need to work together and broaden our lens. Space in some cases has analogies to undersea warfare. You get a track on an object and then you have to propagate it out to predict where it may be in the future. Some cases allocate other sensors to try and regain the track. Mechanics being what they are, we tend to be pretty good about predicting an orbiting object's location but that goes so far when you are dealing with an adversary intentionally trying to deny orbital prediction efforts. We will need to up our game and our capabilities need to orient towards the fact that threat satellites will manoeuvre, obscure and deceive in an attempt to break tracks. Next we need to alter the space attack calculous that exists today. With a handful of destructive events, there could be a significant impact on missions performed by satellites. The benefits of attack invite a pre-emptive first strike on orbit. An imperative we negate the first mover advantage. One way we do this is to proliferate our constellations. What if

instead of a few satellites performing a mission we have hundreds, even thousands? This would significantly raise the level of destruction needed to deny a mission from space. The attack calculous changes and the benefits of a first strike are negated.

Finally, space forces must be able to deny an adversary the ability to use space-enabled targeting against friendly forces. Therefore, we must prepare to achieve space superiority via responsible counter-space campaigning. I emphasise the word responsible counter-space because space is different than the other domains. In the air, land and sea domain, destruction of an asset does not have lasting effect, it does in space. Commercial and civil entities can avoid, at least attempt to avoid hostile areas, in fact if you look at the air picture of Ukraine, it won't surprise any of you that you will see very little commercial, if any, air traffic. They are all trying to avoid the Ukrainian air space. This is not an option in space. If World War and it transits into space, we would have to fight in and among commercial and civil third parties. If destructive engagements occur, the debris will remain hazardous to the surviving assets long after the conflict subsides.

Collectively this means our strategy should focus on confronting Chinese and Russian-maligned activity in the domain through protracted day to day competition, a preferable state compared to crisis or conflict. Furthermore, we must build capabilities that can deny and degrade adversary capabilities but in ways that avoid the creation of long-lasting hazards. Overall, our goal is perpetual competition, locked in a battle for stability in the domain, neither driving our adversary towards disrupting the space domain, nor towards desperation to take irresponsible activities. That is the essence of competition. That means orienting ourselves around the idea that there is no end state, there is no victory in space, because if you do it right, you never fight. At its core, competitive endurance is about long-term deterrence. As you all are intimately aware, deterrence is the cornerstone of our collective security policies. Like-minded nations like ours, like those here, are committed to peace and stability and security that it brings. We are not about reacting to threats, we are about dissuading potential adversaries, instilling caution in their ambitions and ensuring

that the cost of aggression far outweighs any perceived benefit.

In your National Defence Strategy released weeks ago, one of the main goals is to "Avoid the highest level of strategic risk we now face as a nation because strategically, we may have already entered a decisive period for the Indo-Pacific". For me, Deterrence Down Under refers to the complementary efforts of both our nations to protect, preserve access to all domains. One of the foundations of Deterrence Down Under is AUKUS, the trilateral security pact in the Indo-Pacific to counteract the POC's aggression in the region. It represents a quantum leap in our collective capability, particularly in the realm of defence technology. Most people are familiar with pillar one, the sharing of nuclear propulsion technology. Pillar two is equally important. It centres on the sharing of computer and cyber technology, hypersonic technologies, advanced radar capabilities with the aim of improving joint capabilities and interoperability. The highlight of these efforts occurred back in September when the US signed a memorandum of understanding with Australia and the United Kingdom on the deep space advanced radar capability. This 24/7 all weather capability will increase our shared ability to detect, track, identify and characterise objects in deep space and by expanding our ability to monitor and detect potentially hostile actions in space, it allows us to avoid operational surprise and, if necessary, take defensive action.

It is a great example of the types of collaborative efforts that allow us all to expand what individual nations could achieve alone in one of the most critical domains of our future security. But Deterrence Down Under is more than just AUKUS and DARC. Space cooperation will strengthen integrated deterrence because I believe we are committed to working together in the space domain and the some will truly be greater than any individual contribution.

To that end, I want to highlight two areas that the US and Australia are leading and leading the way in space cooperation. First, I point to the enhanced space cooperation agreement that US Space Command and the Australian Defence Space Command signed. This framework deepens military collaboration in the space domain and continues to improve coordination and interoperability to maintain freedom of action in space, optimise resources, enhance mission

assurance and resilience. By focusing on force development, combined training and exercises, development and alignment of the space operational disciplines, reciprocal academic and professional education opportunities, modernisation, future capabilities development and enhanced information-sharing, this agreement strengthens our shared ability to compete and contest in the space domain.

Another good example is the combined space operations initiative, or CSOI for short. The US and Australia are founding members of this critical initiative. Formed 10 years ago around improving operation, coordination and interoperability to sustain the freedom of action in space, it helps us integrate military space power into multidomain global operations we need in order to deter aggression, defend national interests and, when necessary, defeat threats. It is working. What started out as four member nations has grown to 10 members, all with a shared commitment to a rules-based international order, centred around responsible behaviours in space.

The final initiative to Deterrence Down Under that I want to talk about is security classification reform. I think one of the biggest barriers to integration has been our outdated classification policies. To mitigate that barrier, earlier this year the US released an updated classification policy, one that enables us to fundamentally rethink the way we approach classification of space systems and the effects they generate. This policy expands the access to information within the US government and reduces barriers to space integration with allies, partners, commercial space actors. I truly believe this is the most significant change in space classification policy in 20 years. It will allow us to share more information, more quickly, with more stakeholders to better address the challenges in today's competitive space environment. All these initiatives add to the strategic partnership between the US and Australia and they bolster our shared defensive capabilities by sending a clear message to potential adversaries. Any attempt to undermine the security and stability of the region will be met with unwavering resolve. A combined resolve we have demonstrated in the past and one we will not hesitate to show in the future.

Today, we stand at a pivotal moment in history, where the winds of change

are reshaping the global landscape, a landscape that extends further into the space domain. In this era of geopolitical shifts, the alliance between the US and Australia emerges not just as a work against threats but as a beacon of stability, progress and shared values. Let me end with one final quote from General Monash "The best leaders know the importance of collaboration and team work" and looking around this room, I am proud to say that some of those best leaders are right here, working together in advance of our shared values here down under and into the far-reaches of space. I am looking forward to continuing our great work and I am also looking forward to your questions. Let me just say Semper Supra. Thank you. (APPLAUSE)

MICHAEL SLEEMAN: Thank you for your kind words and insightful remarks on the space domain and the challenges. We have a bunch of questions on the app and we have half an hour for questions, so plenty of time. I will look to see if there is any questions from the audience before I go to the app. Go ahead.

>> Good morning. Lovely to see you again, thank you for the insightful words. A question on the rules-based order. We were dealing with an adversary in the Middle East that wasn't really interested in rules-based orders. I am wondering if you see a vision of a rules-based order in space, noting events such as the ASAT test in 2007 and we can probably think of other events but where you see that going in terms of rules-based orders?

CHANCE SALTZMAN: It is an interesting proposition. I get asked a similar type question frequently. If we start talking about tenants of responsible behaviour and emphasis on rules-based order, aren't there nations that will ignore that and do whatever they want? The answer is probably yes. We are all practitioners here, we understand that. That doesn't mean that it is still not the right thing to do to define those responsible behaviours and to specifically call out when nations fall short of meeting those responsible behaviours. I am a fan of peer pressure, that sounds bad. I am a fan of collective like-minded nations saying this is what right looks like. This is unacceptable. To those of us who want prosperous people, those

of us that want safety and security, this is what right looks like. Whether or not there are people willing to abide by that, nations willing to abide by that, our job is to define it, observe it and attribute maligned behaviour, irresponsible behaviour collectively to try and put pressure and restrain those kinds of impulses.

MICHAEL SLEEMAN: Another question "Noting the sovereign and classified nature of space capabilities, you spoke about the integration between forces and nations and agreements we have. How do you see the coalition integration being assured in any future conflict, with those classified systems in place?"

CHANCE SALTZMAN: It has been far more - the transparency has been far worse in the past, I don't know how to say that any better. We are getting better at being more transparent with our space capabilities. There are always going to be classified aspects of space. I feel like I am preaching to the choir because this is a knowledgeable military audience but I have to remind people that the information we gather, we have to protect the ways in which we gather that information. We have to or the information dries up. There is limitations on our capabilities that we don't want to be publicly known and we have to protect those kinds of information. There will always be a need to protect information. This can't be used as an excuse to prevent complex integration of these capabilities across a coalition of like-minded nations. That is part that we are working on. What is the right level of security? What is the right and appropriate level of protection and classification that still enables us to work together, it still enables us to have a common picture of what is going on, while protecting and preserving the capabilities that we are trying to protect? The short answer to your question is we just have to do it. We just have to practice. We just have to call it out when it is insufficient, we have to call it out when a seam creates a problem for operational integration and by practising and becoming familiar, you start to be less concerned about certain levels of risk and highlighting other areas where you can be more specific with what the risk is you are trying to manage. For me, it is about bringing things out in the open and starting to practice tier one exercises, independent drills, tabletop exercises, war games

where we can talk together and come to a collective understanding of what precisely needs to be protected and where we need to share to be more effective as a coalition.

MICHAEL SLEEMAN: The space domain, and correct me if I am wrong, is probably more integrated with the civilian aspects than potentially the other domains. What are the challenges faced with using civilian space capabilities in conflict, noting that integration with the civilian world and military side of it?

CHANCE SALTZMAN: A couple of things come to mind. We are very integrated with commercial capabilities but I am not sure it is completely different from other domains. I think we leverage civil, commercial capabilities in all the domains, the distinction is when it is time for hostilities, it is harder in space to separate those out, as I mentioned, the domain is the domain and if you are operating in the domain, you will be there when hostilities break out. The ability to avoid an area of operations becomes more complex in space. Now we have to start working together in a conflict environment. The good news, if there is any, is we don't have civilians commercial people in those domains to the same degree you might in other domains. The idea of protecting people that are contributing which are noncombatants is less of a problem in space. We are talking about assets, things that can be worked through commercial contract arrangements. That is a positive thing for us, we can make this work because maybe the consequences are more about assets and profits and interoperability than they are about loss of life that could be a problem in other domains. What I talk about with industry is let's just work ahead of time so we're not trying to figure out what the particulars of the relationship are after a crisis has started or after a conflict has begun. Too late. We will be too busy with the tasks that are at hand in order to start negotiating a proper contract and how we are going to protect assets or which assets are more important than others. Our effort is to put all this contractual work ahead of the game, so we can determine exactly what the relationship is with civil commercial entities, so when we get to crisis it is a more seamless transition.

MICHAEL SLEEMAN: I will look to the audience for questions before I go back to the app. One up here.

>> What opportunities do you see for commercial integration through the employment of reserves and does the US have plans to establish a Space National Guard?

CHANCE SALTZMAN: Thank you, senator, for that question. It is a hot topic right now for us. Here is some of the facts we are trying to put in place or some of the principles we are trying to put in place. One, is a part-time work force in the military, however, you describe that part-time work force, is extremely valuable. They bring skill sets that you can't retain on a full-time basis inside the military. They allow a surge capacity that you may not need under day to day conditions but you certainly will need when you get into crisis or conflict. We recognise the importance of a part-time work force as an overall construct to a military service. We were fortunate last year that our Congress authorised us to manage part-time billets. We have a revolutionary approach to talent management. The Space Force as a single component will have the ability to have full-time and part-time guardians in it. This is not a space reserve that's a practical component, this is part-time people in the Space Force and the ability to transition between part-time and full-time will be there for guardians, depending on any number of flexible career options or life getting in the way. We think this is a very exciting way to manage the long-term talent of our force. With those authorities and we are working through them over the next few years to fully implement them, the question becomes do we need a guard component? There are services, the air force, the army that have three components, the active, the reserves and they have a guard component aligned with the states. Interestingly, the US Navy and the Marine Corps do have a guard element, even though they have a reserve element. We are trying to balance the pros and cons of a relatively small guard unit. What are the positives you would get out of maintaining a guard structure and what are the cons? We are talking about a small number of people, so you would need to have an administrative overhead to manage a second component.

Different promotion cycles, different retirement rules. We are working through now what makes sense for the nation. Do we need a guard component or can we leverage the existing authorities Congress has given us for the part-time aspect of our work force? It gets emotional and political, especially when you involve 50 governors and their authorities with regards to the guard, so we are working through those right now. I am trying to stay at a higher level and say this is about what is best for our nation and how best to use the limited resources that the Space Force has to manage multiple components.

MICHAEL SLEEMAN: Any more questions from the audience?

>> Paul from the Royal Air Force. I am Sleemo's Pommie oppo. Lessons identified from Ukraine in terms of war-fighting and the role that Starlink specifically has played. We are aware that the Russians have started to use it as well. What are your key lessons from Ukraine and what do you think others are learning from what they see there?

CHANCE SALTZMAN: That is great. I am always cautious of calling them lessons learned. We still have a conflict that is unfolding. We need to be very careful about saying we have already learned all we need to learn from what is going on in that terrible war. What I will say is we are watching closely. Here is some observations that we have seen, to date. First, there is no question that space is critical to the way modern armies, air forces, pick your service, will contest space. One of the first attacks that the Russians made against the Ukrainians was a counter-space attack. It was actually a cyber attack against the ground network that precluded the Ukrainians for using satellite capabilities for command and control. A warning, the difference between space and cyber is almost zero, in my mind, if you have satellites on orbit, they are useless without the RF link structure and ground networks to make them operable. This was a clear bell-ringer for us, cyber security, cyber defence is paramount in execution of space missions. Second, because of that, then there is this idea that commercial satellites could come in and augment a command control structure and I think the Ukrainians showed they could use Starlink to augment their command control structure. I am

thinking what else could commercial augmentation do to bolster our resiliency when you are under attack? That is the nature of working these contractual arrangements out ahead of time, so we can rapidly expand to include commercial augmentation. One of the bigger lessons, and this is a lesson that was specific to the Space Force in the sense that we are still trying to figure out how we train and educate our guardians to be more mindful of what a contested domain is. For years we were able to basically provide space services in a benign environment. That is not the case now, obviously. What the Russians showed us is just because you have all of the exquisite equipment you need, if you do not have the training, if you do not have the logistics, the sustainment, if you do not have the combined arms operational concepts to employ all these capabilities in unison, you will struggle on the battlefield. That became another observation for me that says I can't just buy the right satellites, I can't just proliferation constellations, I have to provide the training to our guardians. How to operate against a thinking adversary, how to operate under time pressures, how to operate when you are taking combat losses, whether it is on orbit or in networks that you are attending to. Operational concepts, ranges, aggressors, this kind of advanced training that we have seen in other domains and now we have to take it on wholeheartedly in the Space Force.

>> Good morning. Flight Sergeant Hall. Thank you for your introduction, nailed it, good job. With regards to what you said about increasing the number of space objects by hundreds, if not thousands for resilience, how do you balance that against a possible Kessler syndrome scenario occurring?

CHANCE SALTZMAN: This is why I focus on responsible counter-space. Long-lasting hazardous debris is a problem and will be a problem in a war zone space, if you will. It will be a problem. We have to find ways to deny, degrade, disrupt, pick all of your Ds just don't pick destroy because all of those can be effectively used to mitigate what we are talking about and this is this space-enabled targeting. That is the most important thing I have to counter, in terms of denying an adversary the use of space against our forces, against the friendly forces. I am

interested in all of the things that can deny, disrupt and degrade, so I don't have to go to the next step of debris. Once you start creating debris fields, especially in low Earth orbit with a lot of non-manoeuvring satellites, you could start to have this effect that one piece of debris generates more debris and so forth that propagates throughout that low Earth regime. We can't have it. This is why I am focused on responsible counter-space campaigning. I also use this as an opportunity to talk about congestion. It is an easy word to say and space is more congested now than it was five years ago - no question. We still have big space theories. Is there a version of big sky theory about keeping airplanes out of each others' way? There is a version of this. We have to talk about the scale. It is hard to envision how big space is. I kid General Whiting all the time he has the only AOR that is still expanding so he has to keep this in mind. We are tracking 40-45,000 objects every day in space. I remind people over the continental United States every day there are 40,000 flights, airline flights. Much smaller air space than what we are dealing with in lower Earth and orbit, a comparable number. Why? We have good air traffic control. The rules of the road are well understood. There is good communication between owners and operators of those systems. You can do it, you just have to do it right. You have to set up the sensors, the communication and you have to set up the procedures so we can manage the capabilities that are on orbit. Worried about conception but we have to figure out how to do it. Second, very worried about debris and we are heavily focused on responsible counter-space campaigning.

MICHAEL SLEEMAN: A question from the app now. You spoke about the United States Space Force operations in the context of the in space and from space. Can you expand on that to the space component of that?

CHANCE SALTZMAN: On the blue side of that equation, to space has two elements of it. One is the obvious spacelift mission. We have to be able to launch, provide launch services to put new capabilities on orbit. We can talk about that in a second. The second piece that sometimes people forget is there has to be a pretty robust ground architecture, a system of antennas worldwide that allows

you to communicate with the satellites, retrieve the data that the satellites collect and move that data around between the users with very low latency. If we don't have that ground network, I say we don't have access to space sufficiently either. It is the ground network and it is the ability to launch capabilities into space. One nuance that maybe not everybody understands is the Space Force doesn't build rockets. The Space Force doesn't really have a launch capability. We commercially contract those services for us, so we have United Launch Alliance, we have SpaceX, we have other competitors that are putting smaller payloads on orbit. We have commercial services that provide our access to space. What we provide is safe ranges, telemetry to make sure the systems are used responsibly and we handle explosives responsibly and so the Space Force provides that launch infrastructure not necessarily the rockets themselves but the number of providers of that service becomes critical. One, it helps drive the price down and we don't have unlimited budgets so driving prices down is good. Second, is you are not beholden to a single service provider. You want the diversity, so if there is a problem on one set of rockets, it doesn't cripple the fleet and to have access to space. Diversification, number of providers, different agility and flexibility is a key focus on assured access to space. Our ground infrastructure is not the fun part of budgeting. When you have a remodelling job in your house and all you want to do is re-do the kitchen and make it look nicer but the contractor tells you that your foundation is cracked and your plumbing and wiring is bad and you have to spend money on things that no-one will ever see, no-one will notice but if you don't take care of it, you know the rest of the house will be as valuable. If I don't take care of the antenna networks, that ground architecture, all of the satellites in the world will not be as productive. That is what we are focused on and to space, those are the two aspects of it.

MICHAEL SLEEMAN: Question at the front, General Frewen.

JOHN FREWEN: Could you give us reflections on culture and how you see a distinct space culture, a distinct space service culture taking shape?

CHANCE SALTZMAN: It is a question that weighs heavily on me. This is one of the more important things that you do as a service, I think. I spent 29 years in the air force doing space operations and, to some degree, there was a little bit of an air force subculture that "we are the space people". We did have a culture and a lot of the airmen that were doing space was the foundation of the Space Force. Here is an interesting fact, we have 9,000 active duty members in the Space Force. We bring on about a thousand officers that enlist every year, give or take. In the last four years we have brought on about 4,000 of those 9,000. You are getting close to half of our active duty have been in the service less than four years. Think about that. That means they have known no other service besides the Space Force and they are looking for how does this work? What is expected of me beyond the procedures and training aspects? What is expected when you say you are an officer in the Space Force, what does that mean? I know that is critical. I know that is important. The problem is it is a hard thing to grab the reins and drive. I believe culture is what emerges from a series of discussions, activities, decisions that are made. I know every decision I make will set a precedent which will drive behaviour, which will create a culture and so it is a little bit of an indirect approach. I have to make the right decisions. All of us have to make the right decisions, perform the right kinds of activity, reward the behaviours we want to see and punish the behaviours we don't want to see because, collectively, what emerges is our culture. It is one of those things that wakes me up. I can't just make a decision for the decisions sake. I have to say what will be the second and third order effects. How will the force see this? If I allow somebody to stay in place and not move for six years, if that is the policy, is that good or bad? Is may make sense given the number of places we have and the need for continuity in our activities. There is good thoughts to that but it will drive a culture, it will drive specific behaviours. We have to factor in let's think through this from a cultural perspective, what are we affirming, what are we denying if we make this decision? I don't have an easy answer for you, other than it is important that we have to make sure we consider it in every large decision that we make. How will this effect the force going forward? What kind of culture does it help build, establish, is it the one we want or does it build

behaviours that maybe we don't want? Tough business. Important but tough.

MICHAEL SLEEMAN: You talk about going forward. Space was an afterthought and an enabler and now it is a war-fighting domain. What is next?

CHANCE SALTZMAN: Gosh, ask me an easier question. You're right. I have seen that transition. I use a bad analogy periodically that when I started in this business, space was seen as the icing on the cake. The cake was baked and we could make it sweeter if you put space into the mix. Now, it just doesn't work that way. I have shifted the thinking, we are not the icing on the cake, we are the eggs in the batter, once made you can't extract. It is no longer a cake if you try and pull the eggs out. We are fully-baked, in that the joint force does not work without critical space capabilities. What is next is just a whole some recognition that it is not just critical support but it's actually critical integrated operations that we can't envision going to war without these capabilities and we have to step up the resources, we have to step up the training, we have to step up education, dedication to tactics, procedures, all of those things that make us effective as a joint force we have to fully commit to. I believe it is a continued evolution of understanding how critical that is. We have some first world problems in the Department of Defence, where the money that I say I have and the size of the force that I have is relative to all the other space corps that are out there. In the Department of Defence we are 3% of the budget and 0.5% of the manpower. We are still a tiny fraction of Department of Defence and making sure that that tiny fraction is accounted for with the same level of criticality of any of the other contributors to combined is an ongoing efforts. The next four to five years is making sure we can live up to that promise and making sure all of our plans and resourcing decisions fully account for that.

MICHAEL SLEEMAN: Back to something you said before about the number of things you are tracking in space and the number of commercial flights over the United States. Should space traffic control be a civil or military responsibility?

CHANCE SALTZMAN: I think it is analogist to military air, I think it is both. If

our civil sector can focus on safety of flight, safe expiation procedures, put sensors together that would allow us to have that picture, that is valuable. They will be able to think more and talk to more commercial providers. They will put more manpower against this to make sure that this commercial providers understands there is a manoeuvre from this commercial provider and it takes some of the burden off the military for all the right reasons - safety of flight. They are not going to be able to anticipate what I said was the deception that you see in manoeuvre. They won't be able to anticipate counter-space behaviour in a way that we need to make sure that we understand. There will be a role in a contested environment for the Space Force to maintain that picture. You can't just wait until the conflict says put the picture together, you have to do that continually. This will be a partnership between the two and we will have good roles and responsibilities, shared responsibilities but we will both have important, different activities and responsibilities for doing that.

MICHAEL SLEEMAN: Is there any more questions in the audience?

>> Good morning. John Mason. Aside from an outstanding looking tunic, you talked about the generation of the force. How are you attracting, how are you training and generating that force and what has been the biggest challenge thus far in such a rapid expansion of your people numbers?

CHANCE SALTZMAN: Thanks. It is the uniform, I think. (LAUGHTER) There is so much excitement about space right now. I have to acknowledge that a large part of that is driven by civil and commercial, what NASA is doing in the US is amazing. The commercial explosion with SpaceX and our billionaires helping us in commercial space, it generates buzz and people are excited about it. We turn away - this is the saddest part of my job, is we don't have the positions for all the people interested in coming into the force. We have thousands of applicants for hundreds of jobs every year. I keep saying "Try again next year" because the interest is incredible. The average enlistee, the average brand new specialist guardian that comes into the force with no other military experience, average age is 22, with college under their belt. This is a very technically-savvy work force that

we are bringing into our most junior ranks. My challenge is then how do I keep them? How do I keep them challenged at the leading edge of technology? How do I keep giving them rewarding experiences so the Space Force is the hardest job to give up? That is my goal, that is our challenge. We are looking for innovative ways to let them work with industry. One of the things I hear from young engineers that come in is they don't want to fall behind their counterparts that didn't come into the military. We know the pace of acquisition sometimes means the tools that we give our operators around the leading edge of technology because of how long it takes. I am trying to develop ways to take that work force, move them periodically, like deployments if you will, into industry. Go and work there for six months of the year, get that experience and recall on what is emerging technology and bring that experience back to us. We are trying to look at innovative ways to stay at the leading edge, to keep a work force that highly desires to come in and I have to retain them. Uniform only gets you so far and when it comes to government procurement, the uniform is a cautionary tale. We have been working on this thing for three years and there is 100 out there. I can't spill coffee on my uniform because I am done for a week or two. (LAUGHTER) These are fun challenges to have.

MICHAEL SLEEMAN: A question from the app. Enduring competition and deterrence in space implies we are in a permanent space Cold War. With associated terrestrial impact, so is your theory of victory framed through a space Cold War lens?

CHANCE SALTZMAN: Yeah, I specifically call it a theory of success not a theory of victory because this idea that there is no real end in mind, I think, historically, if we look back on the Cold War, it wasn't your traditional war, obviously. It becomes more crystallised when we look backwards on it than for those of us that live through it. It was a way to describe something that wasn't really there. Most of us have plans and we have strategies to task and one of the first things you read are what are the desired end states? The Cold War at best had lofty strategic geopolitical end states and it didn't have military end states. The end state was competition. Keep putting sand in their gears and try to do more than they do

and this idea of competition would have value. That is where we say competitive endurance, a theory of success not victory. I am not trying to define an end state, I am trying to manage geopolitical stability with regards to the space domain. That means you build a slightly different force. That means you think about procedures and tactics in a different way, the equipment you use, the training you use is slightly different when you have that mindset. If there is one in state it is perpetual deterrence, perpetual stability, perpetual security and stability. It is a slightly different way of thinking about what the long-term goals are of a service rather than thinking support a plan, drive to an end state, declare victory and be done with it. I don't think that is going to work in space.

MICHAEL SLEEMAN: Time for one more question. Is there any from the audience?
>> Gus Porter, the Air and Space Attache from Washington DC.

CHANCE SALTZMAN: Welcome to Australia, Gus.

>> My first time here too, Sir. Post-World War I, plenty of air power theorists had visions of where air power would go, particularly in terms of long-range bombing and it would change the nature of warfare. Do you have visions of where space power will go, what will we see above us 50 years from now, will it change the nature of warfare?

CHANCE SALTZMAN: I think you are going to see more and more missions migrate from our traditional land, sea and air domains, more of those missions will move to space. The cost of launch going way down very quickly. The mass production of small, extremely capable satellites is accelerating beyond belief. We have got manufacturers building a rocket engine every day. We have got 7-10 satellites rolling off production lines every day and we have multiple of these production lines. You combine lower cost to orbit and more satellites with more capability, you can start to envision a lot of different missions that go from our traditional domains to space and then that brings a host of other issues with it, how do you command and control, how do you manage seams across a global enterprise? Does the concept in US terms of our regional combatant commands, does that hold true? How do you stitch them together when a command and

control and some of the key missions are done on a global scale every day? The same assets that are supporting a Middle East issue, 45 minutes later are supporting Indo-Pacific because of the orbits.

We have to figure that out. I do think wherever economic interests move, you are going to see competition for scarce resources in a collective sense, which means you're going to see conflict in that area. And I think that means, you know, it's not inevitable, imminent, but I can see conflict extending into space and we need to be ready for it and understand, and try to manage. That's why I'm so focused on this idea of competitive endurance and stability management. Because I can easily see us just shifting to that mindset. And force-on-force in this domain is bad news for everybody involved. Because in the same way we achieve global effects, we can create global consequences very fast in space.