FORECAST INTERNATIONAL

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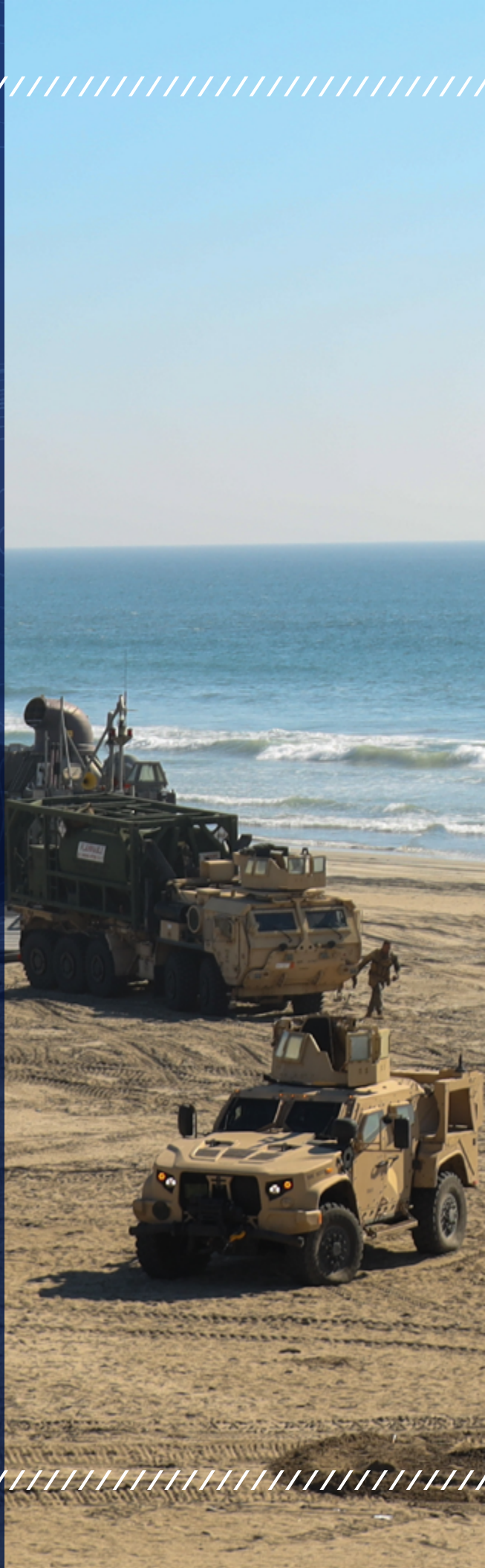
The Logistics Imperative

Sustaining Force Projection in Contested Theaters



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INTRODUCTION

The ability to sustain logistics has long been a cornerstone of successful military campaigns. History has proven that a force that sustains supply lines holds a decisive advantage. This is especially true in contemporary warfare as adversaries seek to disrupt supply chains through direct attacks, cyberattacks, blockades, and other means. Without secure logistics, military forces risk shortages of ammunition, fuel, and medical supplies, which can cripple operations, reduce operational tempo, and limit strategic reach. In contemporary conflict, especially against near-peer adversaries, the ability to sustain logistics in a contested environment is vital. Understanding this, the U.S. military is pursuing resilient, adaptive, and innovative supply networks to counter disruptions. As threats evolve, the United States must adapt logistics strategies to contested environments or risk operational paralysis. To better understand the evolution, importance, and challenges of contested logistics, Forecast International interviewed the following experts:

Subject Matter Experts

Major General Gavin Gardner
Commanding General of the 8th Theater Sustainment Command, U.S. Army

Brigadier General Shane Upton
Director of the Contested Logistics Cross-Functional Team, Army Futures Command, U.S. Army

Colonel Wes Adams
Director of the Strategic Plans and Futures Division, Defense Logistics Agency, U.S. Air Force

Lieutenant Commander Jake Hamilton
SOJ4X at Special Operations Command, Pacific (SOCPAC), U.S. Navy

Joe Blanton
Director of Strategic Initiatives, General Dynamics Information Technology (GDIT)

THE INTERVIEWS

The following responses have been lightly edited for brevity and clarity.

1. How would you define the contested logistics space?

MG Gardner: "From the Army's perspective, we operate in a contested logistics environment across the land, sea, air, cyber, and space domains. Since WWII, we've had unfettered access to prepare and deploy from the continental United States unencumbered by threat. And that has all changed now, because we're going to be contested across all five of those domains."

BG Upton: "When you say contested logistics, it's really an environment. And when I use the term environment, I mean the different domains [air, sea, land, space, and cyberspace] in which we have to support our deployed forces and in any kind of operation, whether that's a crisis or full conflict with a peer adversary… When deploying and employing a force, you have to position people and equipment somewhere on the globe, and then you must be able to sustain and maneuver them to ensure there's operational reach for those forces."

DVIDS | PETTY OFFICER 1ST CLASS CHARLES J SCUDELLA III

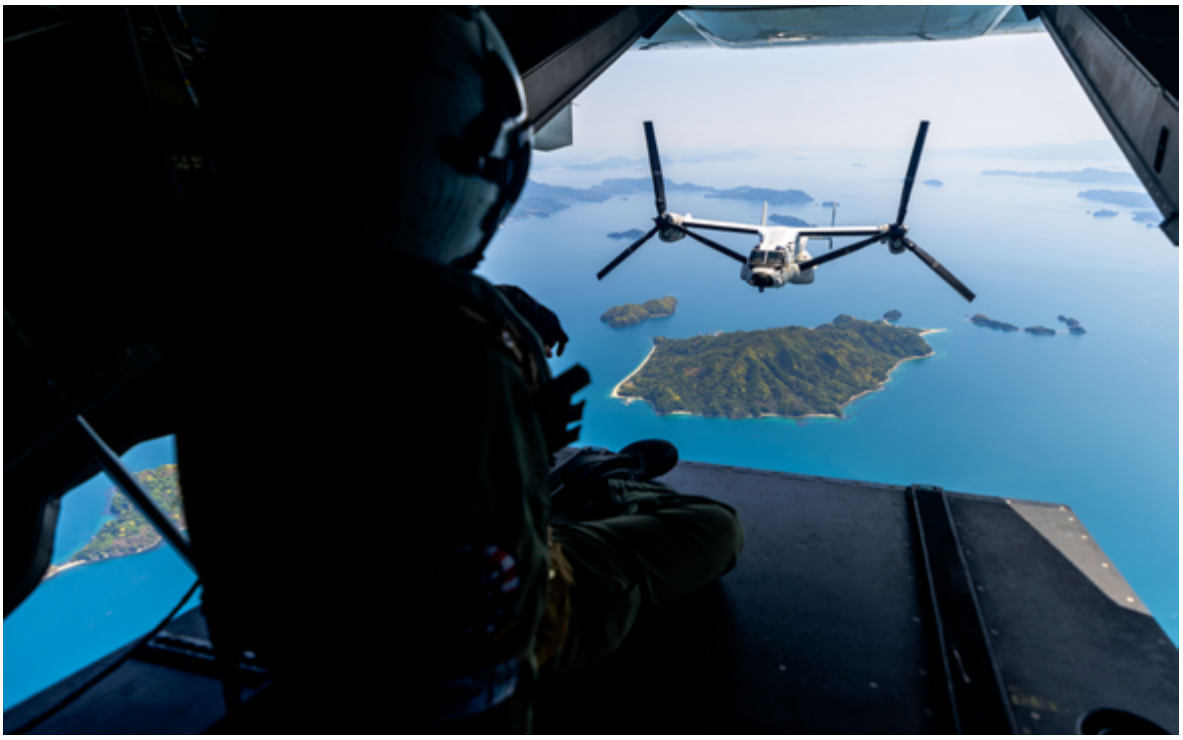
COL Adams: "By its definition in 10 United States Code, a contested logistics environment is one in which the armed forces engage in conflict with an adversary that presents challenges in all domains and directly targets logistics. Naturally, there's more to the definition, but what's implied is what I think really deserves the most attention, and that's adversarial intent. There is no doubt that acts of God, natural disasters, and catastrophes impact how we sort, how we sequence, and how we deliver effects for the warfighter. In fact, the Francis Scott Key Bridge collapse is a good example, as are the California wildfires, Hurricane Milton, and Hurricane Helene. Those are all great examples where logistics was negatively affected. However, the missing element of those examples is what's central to contested logistics, and that's an adversary directly intending to interfere with logistics and our ability to project power. On any given day, logistics is hard, but in a contested logistics environment, it's harder yet."

> **"On any given day, logistics is hard, but in a contested logistics environment, it's harder yet."**
>
> — COL Wes Adams

LCDR Hamilton: "The contested logistics space is where our efforts to sustain forces will be conducted in the face of opposition, disruption, and interference from hostile forces."

Joe Blanton: "Contested logistics changes depending on the environment that you're operating in. When engaging in conflict with adversaries, you're presented with challenges in all domains. Contested logistics is about how we provide support in those contested spaces.

The term contested logistics came about as we started to shift our focus away from Iraq and Afghanistan and toward a more global environment. In Iraq and Afghanistan, we were able to move materials into country and essentially stockpile or forward stage all the needed materials for maintenance, sustainment, or support. Whereas, as we look to the Pacific region for example, the sheer distance itself poses a challenge and creates a contested environment.

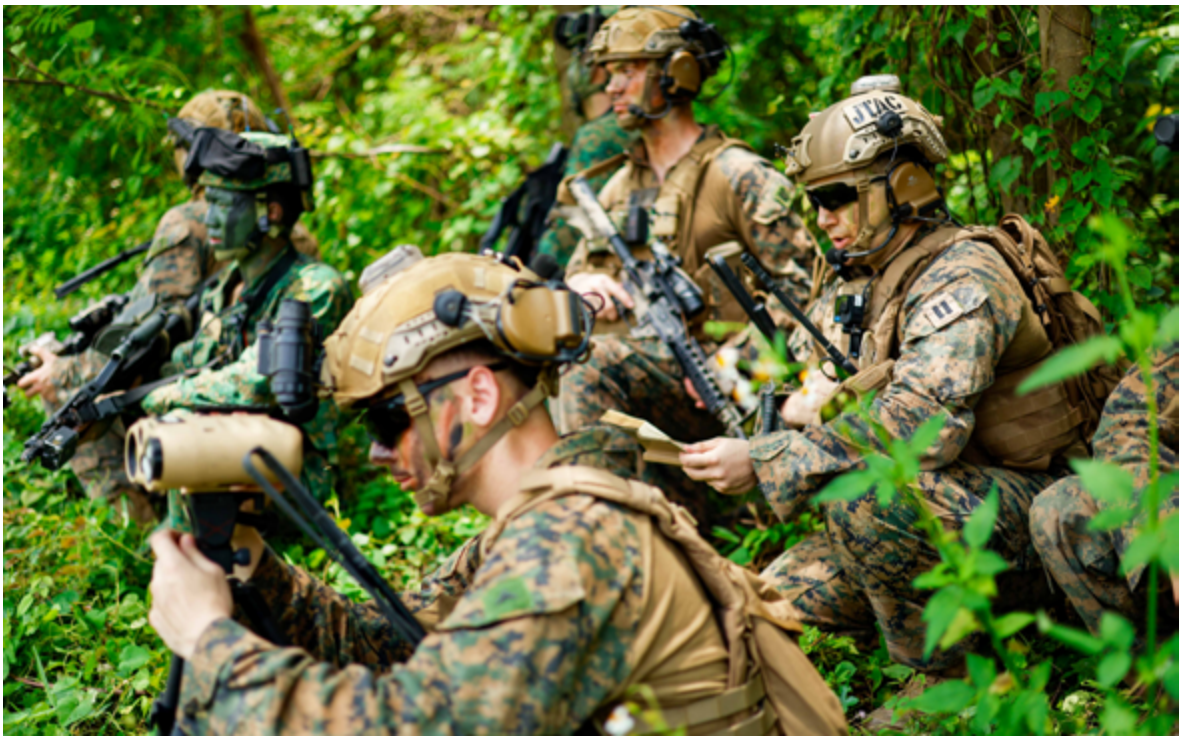


DVIDS | PETTY OFFICER 1ST CLASS RYRE ARCIAGA

There's also a heavy mission partner reliance component to contested logistics. The more contested you get, the more benefit our foreign mission partners can provide. As we get more contested in the logistics space, much like any of the other command and control elements or maneuver elements, we become more reliant on our relationships with those mission partners that allow us a permissive environment to maneuver, store, and forward stage."

2. Why is contested logistics critical for supporting forward-deployed warfighters?

MG Gardner: "There are some things that have really changed the [contested logistics] space writ large. I think first and foremost is the presence of a near-peer adversary. Our National Defense Strategy defines several threats, including Russia, North Korea, and Iran, but the elephant in the room is the People's Republic of China, which has developed a military that is solely focused on inhibiting our ability to project and sustain combat power in the Pacific. The [Indo-Pacific] region is so important because of economics… So much of the world's trade goes through this area that the U.S. military — the Navy in particular — has ensured the free commons of trade and led to the great international order that we've had for the last 80-plus years."



U.S. DEPARTMENT OF DEFENSE | MARINE CORPS STAFF SGT. DANA BEESLEY

BG Upton: "When focusing on sustainment and support of that forward-deployed fighter in a contested environment, I think about a few key pillars or imperatives. First of all, we have to figure out where to position our assets and capabilities. If we know an adversary can contest our movement, it becomes more important to make very good decisions on where we do that. Then, in certain environments, I'll use INDOPACOM as an example; there's a distance factor there. The sheer physics of how far apart things are, land masses more specifically, means that asset capability positioning has to be done correctly. Otherwise, you will not provide timely support to the warfighter at the pointy end of the spear.

Another [pillar] is maintaining visibility of critical assets. I'm not just talking about critical military assets. This includes things like natural resources, rare earth minerals, certain parts of the supply chain, and other assets that are imperative for our prolonged endurance and sustainment in a fight… As we consume things like ammunition and other commodities that are perishable, we have to remanufacture or reproduce them.

A third imperative is the methods and means of distribution. If we know we're going to be in a contested environment, we have to think differently or use almost redundant methods and means of distribution. In past conflicts over the last 20 years, we could use big cargo aircraft to move supplies. Now that's all denied or contested. We've got to figure out different means of distribution. That may mean using seaborne or orbital delivery to a point of need… And we're going to be relying on allies and partners globally to help diversify our methods and means of distribution, especially if we're contested… We have to be able to get critical supplies to those elements on time and in place of choosing, or we lose our advantage.

The last [pillar] is that we have to start using data, artificial intelligence, and machine learning to make faster decisions and actions. You may have heard the term Iron Mountains, meaning a single supply point that you keep siphoning off of. We know that will not be an option in many areas of that tactical edge or in a contested environment. Looking at recent examples in global conflict, you're seeing any kind of large supply node being destroyed or reduced. We have to think about how we offset that through dispersion and timing of actions. You've got to keep your resupply timing and locations in motion almost constantly."

COL Adams: "The key piece to this answer is that logistics is critical to every warfighter… We've been saying this at [the Defense Logistics Agency] for many months now, that the joint force has enjoyed relative freedom of maneuver and ease of sustainment for decades, getting most of what we wanted to any location we desired. When you look at where we've gone as a joint force and where we have been employed in the last 25 years or so, it's amazing not just what we've done, but how well we sustained those forces abroad. This is why contested logistics is so important, to factor that new complication into the equation. We now expect our freedom of maneuver and our ease of sustainment to be challenged on multiple fronts… This is the new logistics environment. More importantly, it is an expression of how critical it is for the joint force to factor logistics into all levels of planning. Logistics must not be an afterthought."

LCDR Hamilton: "It's the old adage, you need the right thing at the right place at the right time… If we can't resupply or sustain our forces, we might have one good punch and that's it. But, if you look throughout history, and even currently in Ukraine, wars aren't won in 48 hours. Desert Storm was an exception, but we spent six uncontested months stacking iron in Saudi Arabia before going in. So, when I think about the criticality of contested logistics, we are here to sustain operations for whatever the duration of the need is. Without resourcing or focus on contested logistics, you're going to be forcing commanders to either culminate [transition from offense to defense] because they can no longer sustain their operations or you have to take greater risks with more vulnerable assets to resupply your forces. For example, things like your typical cargo aircraft are extremely vulnerable to any kind of missile system or aircraft that we are likely to encounter as we head further west in the Indo-Pacific, and it might not be able to get there."

> **"When I think about the criticality of contested logistics, we are here to sustain operations for whatever the duration of the need is."**
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> — LCDR Jake Hamilton

U.S. DEPARTMENT OF DEFENSE | ARMY STAFF SGT. XAVIER LEGARRETA

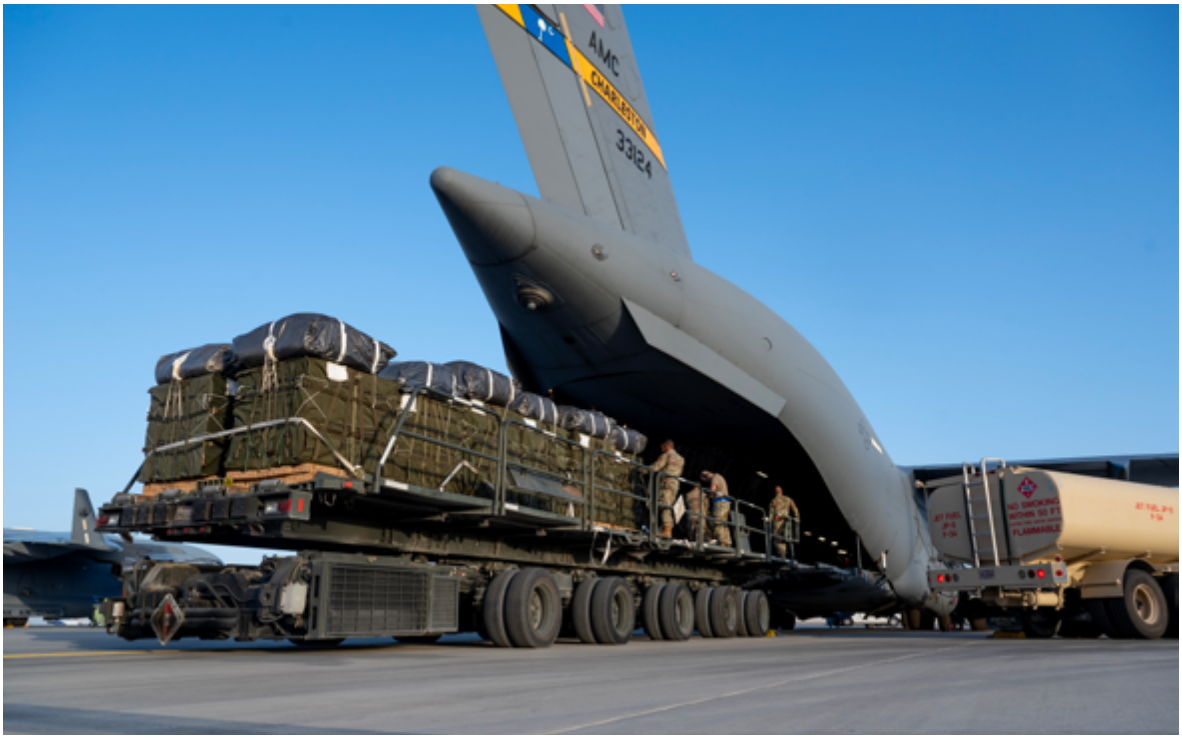
Joe Blanton: "Logistics is the lifeblood of the maneuver force. As you flow forces into a theater, if you cannot resupply, the consequences are dire. The ability to resupply with food, fuel, and most importantly, munitions is critical. Military operations must have logistics to be sustained. Oftentimes, it's the longer, more time-consuming function as you're preparing for conflict. If something were to escalate with an adversary in the Pacific, we'd have to be forward-thinking and even pre-positioning material to have those conditions set and established in advance of conflict.

By implementing robust and flexible logistics systems, military forces are able to sustain their operations, maintain high levels of readiness, and quickly adapt to emerging threats. Contested logistics enables the swift repositioning of resources and ensures the upkeep of essential equipment. It also provides the agility needed to move personnel and resources where they are most needed, ensuring that warfighters remain effective in ever-changing and complex environments."

3. How has contested logistics evolved?

MG Gardner: "Since World War II, we have enjoyed unfettered access to prepare in the continental United States and deploy forward pretty much unencumbered by threats. That has all changed now because you're going to be contested across all domains [land, sea, air, cyber, and space].

For the past 20-plus years, the U.S. military has gotten very good at deploying large formations to a place of sanctuary, whether that was Saudi Arabia during Desert Shield and Desert Storm, or Albania when we were having a crisis in Kosovo. In past conflicts, we were able to sustain and project combat power based on large, fixed sites. But today, everywhere can be seen. The proliferation of satellites and access to information show everything. You really can't hide anymore. There's no sanctuary in the United States, and there's no sanctuary anywhere around the globe because you can almost always be seen. From a logistician's perspective, if you can be seen, you can be targeted, which means you could be taken out. In the past, we've relied on very large bases for supplies and to project power. We can't do that anymore.



DVIDS | STAFF SGT. LAWRENCE SENA

We must re-examine our entire methodology for how we sustain forces. We will have to be much more distributed, much more of a mesh network. One node in the network can't be so critical that if it's lost, the entire network fails. It almost has to be a self-healing node. If we lose one, we just go to an alternate. We often refer to a PACE plan: a primary, an alternate, a contingency, and an emergency location that you can continue to route supplies, logistics, and sustainment across the theater. That's the network that we're developing out here.

There's no desire from a U.S. perspective to create more bases in the Pacific. You're talking about sovereign nations that, quite frankly, probably don't want a U.S. base located in their territory. But what we are looking to do is establish places where you can have a logistics network. Maybe it's a storage facility for food or fuel. Maybe it's a port or airfield through which to routinely move supplies forward. By creating a distribution network that self-heals and rehearsing moving supplies across the theater, we can build resiliency and sustainability into our logistics. This also creates a targeting dilemma for any adversary. You can't put all of your eggs into one basket… Basically, we spread all the proverbial requirements around the theater and then practice moving those resources around so that you really can't pinpoint one particular place that collapses the network."

BG Upton: "What's changed is that the United States is no longer a sanctuary for force projection of strategic power. Looking back at recent conflicts like those in Iraq and Afghanistan, we still could force project our power pretty much anywhere on the globe at our choosing… Now we know an adversary would attempt to contest us in any domain. And now with modern technology, increased weapon ranges, and even cyber warfare, we're being contested even as we project out of the United States. It may be as complex or as simple as a cyber attack that shuts down the electric grid or something like that. Adversaries can impede us from putting forces where we want at our time and place of choosing.

Another thing that has evolved is how we use things like autonomy. I'm not talking about replacing a lot of humans with autonomy, I'm talking about the evolution of thought of how we use robotics, unmanned platforms, or optionally crewed platforms that distribute or resupply by air, land, and sea. These systems can reinforce our distribution network and our capabilities. If you look at INDOPACOM, the sheer distance from the west coast of the United States to the first island chain is massive. When shipping supplies to this

region, using things like smaller unmanned or autonomous platforms can distribute that supply network onto many assets that are lower cost, easier to manufacture, and easier to replace. We used this concept with crude watercraft in World War II. They were called freedom ships. The Army used thousands of them, making it much harder for the adversary at that time to see or even to target.

A third evolution we're seeing right now is the advent of using data in real time. From a logistics and sustainment perspective, we can use real-time data to make better decisions because it gives us the ability to start predicting things like consumption and start initiating sustainment or resupply actions before a unit would have ever asked for it… That also ties into equipment readiness. Looking at diagnostics and data, we can see a potential failure and we can take action, preventing that equipment from becoming non-mission capable. Sustainment folks have been trying to figure out these estimates for centuries. Now we're trying to harness modern technology like AI, large language models, and machine learning to rapidly figure out estimates and then inform commander decisions much faster."

> **"What's changed is that the United States is no longer a sanctuary for force projection of strategic power."**
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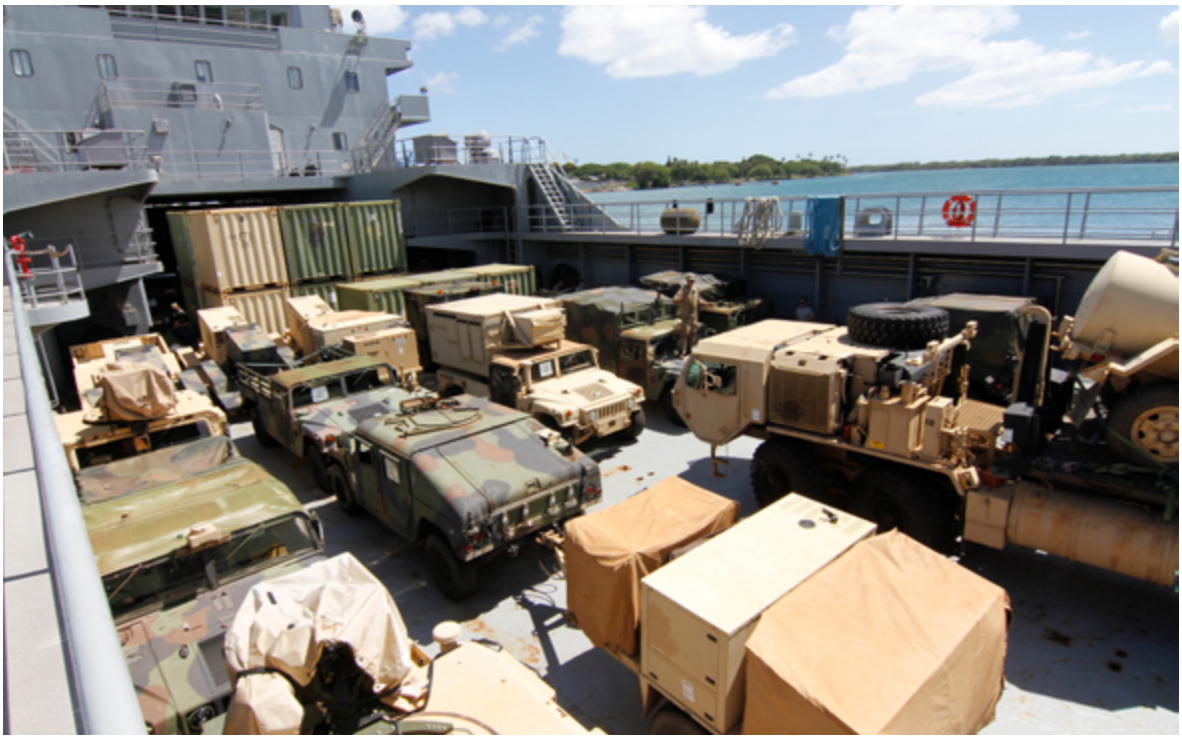
COL Adams: "Contested logistics isn't new. In fact, there's this quote that logisticians are often prone to read and use. It dates back to Alexander the Great. "My logisticians are a humorless lot. They know if my campaign fails, they are the first ones I will slay". That's pretty macabre, but it demonstrates that logistics has been critical for a long time... We've also learned proximity is not a prerequisite. The globe is now so interconnected, ripple-effects span both time zones and hemispheres and carry significant weight. That span of influence, that span of impact, was once really limited to that theater of war. Cyber is a great example of a domain that we fully expect to remain contested, but also has global implications at the speed of light… It's abundantly clear that contested logistics has evolved, and that it is now global, fast, and consequential."



DVIDS | SPC. JAIME RUIZ

Joe Blanton: "We're no longer operating on the concept of uncontested logistics. We don't have a large forward footprint, and we're not relying heavily on service support. Contested logistics has evolved because we're dealing with larger-scale conflicts with adversaries that contest the environment. We now have to insert ourselves into some areas where we once had support, but now we have to provide scalable logistics while maintaining a smaller footprint.

In addition, military logistics previously involved the use of predictable supply chains to support operations. As warfare has become more complex, especially with the rise of threats across multiple domains, contested logistics has had to evolve to address new and more diverse challenges. Contested logistics has transitioned from a straightforward supply chain process to a dynamic, multi-faceted system that leverages modern technologies, anticipates cyber threats, and requires adaptability."

4. Looking at the future of contested logistics, what are the biggest challenges?

MG Gardner: "Here in the Pacific in particular, we have the tyranny of distance. We talk about it all the time. The physical geography of the Pacific Ocean provides great protection to the mainland United States, but also becomes an unbelievable logistics challenge. It's a challenge to project, and then more importantly, sustain combat forces forward in the theater. That tyranny of distance alone makes it an unbelievable challenge.

One of the hardest things we do is process large amounts of data to make informed decisions. If we could leverage AI to assist with some of those common problems, maybe it's route identification because of weather or enemy action. Having an AI system that assists with rapid recommendations on logistics for supply chains, maintenance, transportation, or anything else, it would help us better synthesize data to make timely decisions."

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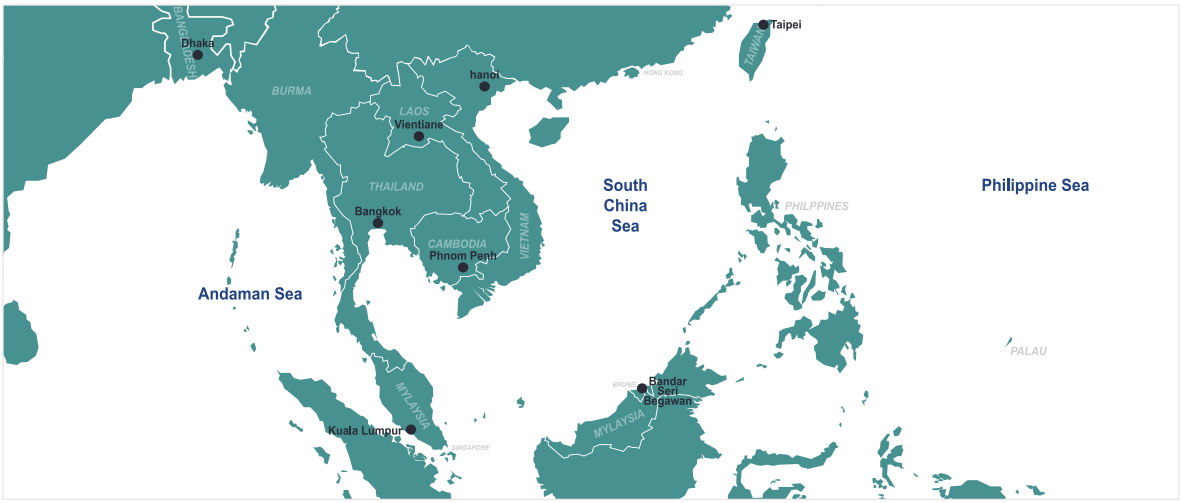


ADOBE STOCK | TUNA SALMON

BG Upton: "One of the biggest things we're wrestling with now is figuring out how to conduct large-scale combat operations at scale with the presence of a very capable adversary. We know globally we're going to be playing the 'away game' and some of these adversaries are going to be playing the 'home game.' We have to think differently about using other methods and means to do things like casualty evacuation to make sure we're taking care of our most valued asset, our human beings… We are working very hard and experimenting with medical technologies to quickly get data from the point of injury on the battlefield to a medical provider who can see that in real time. I think that's a huge challenge in a contested environment.

Another big challenge is ammunition. The rate of ammo consumption we're seeing in modern conflict, even in the ones that are going on globally right now, presents a challenge. That's why I mentioned autonomy and the widening of distribution options, because we're going to need those options to provide munitions to our units and to ensure their operational endurance."

COL Adams: "Many warfighters recall days of deploying before the existence of optimized distribution networks and in-transit visibility, when unspecified inventory stacked up at various ports. These "iron mountains" of storage containers often arrived without a clear understanding of what was in which container, and inventory control required countless hours of sorting, sifting, and reorganizing. We can't keep building iron mountains. We can't get everything we want and have it everywhere we need without creating bigger problems than the ones we've solved…

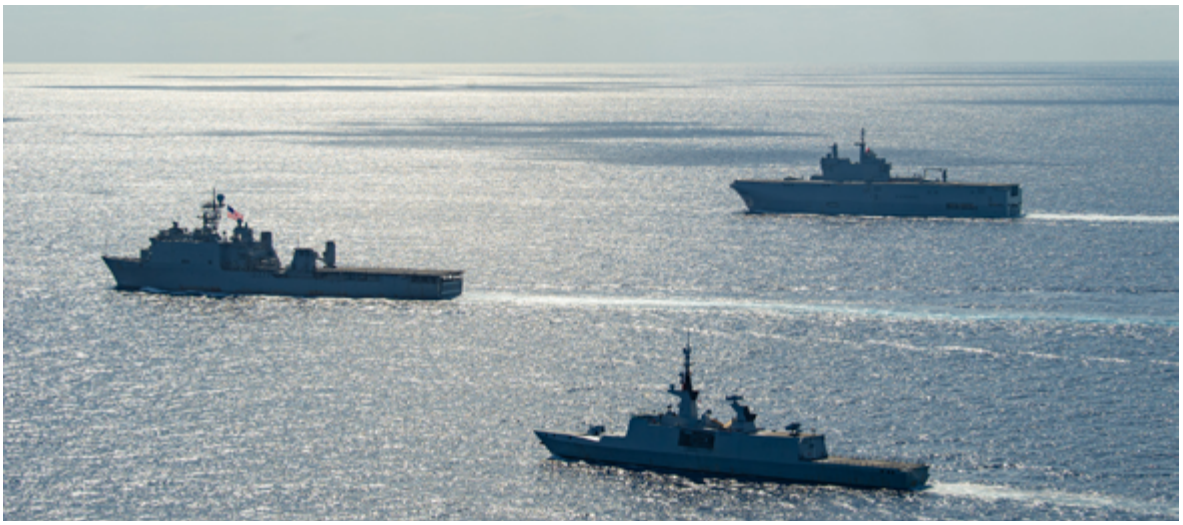
We know that contested logistics will challenge how we project power. More importantly, how we sustain that power. To overcome it, we've got to know the requirements. We've got to know what to stay focused on. We have to prioritize. Even more so, we've got to be resilient and redundant in whatever those capabilities might be. We're going to experience longer travel times for transportation, and we're going to have a diminished visibility of goods and transit… We've got to be well-informed and deliberate in our efforts, and at the end of the day, it's going to take resourcing."

LCDR Hamilton: "[Special Operations Command Pacific] is the theater special operations command for INDOPACOM. We specifically focus on directing all special operations in this [area of responsibility]. So, my current job is primarily focused on the first island chain. Of course, that's not the only thing that we look at, the Indo-Pacific is over 50% of the globe… One of the first [challenges] you'll hear is the tyranny of distance. It's "tyranny" not "challenge" as all your other problems start to look a lot smaller by comparison, the farther away you get from the point of need. If you draw the distances between the continental U.S. and those point-of-need areas in the first island chain, you're looking at something like fifteen hours of flight time or two weeks of moving a ship across the Pacific. You're also going to connect through some of these very limited nodes along the way, like Guam, Hawaii, or Okinawa. You start to realize that if you need to get something to the point of need, it's going to take you days or maybe even weeks before it starts making an effect in the area that you need it. And that's presupposing all of your other problems are solved, which clearly they're not.

Probably our next biggest problem is that we just don't have the logistical connectors that we would want to sustain a high-tempo crisis or conflict. At the outset of a crisis, all of our connectors will become high-demand, low-density assets… For every 50 different critical needs, we may only have 10-15 things that can actually move.

Beyond that, we have a posture which is a holdover from World War II. We have some key locations where we've developed a lot of infrastructure to support our forces as we move west, but those Iron Mountains and the logistical connectors that move between them are very dependent on pretty well-developed infrastructure. Big airports that can support C-17s or deep water ports like Pearl Harbor, for example. These are all locations that don't move, and everybody can see them. We may not be able to rely on those things like we have in the past.

Another challenge is that most of our logistics is communicated over unclassified networks. We're also very reliant on the civilian transportation infrastructure, which we may not be hardened against certain cyber vulnerabilities.



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You also have to understand that we're going to be doing this from a joint perspective. It's difficult enough trying to communicate between the Army, Navy, Air Force, Marine Corps, and Space Force. We'll also need to communicate with all of our allies and partners. Our National Defense Strategy lists our allies and partners as one of our advantages, but communicating all of our logistical requirements is not only difficult, it creates its own vulnerabilities.

You can look at some of the unclassified strategic documents coming out of China that say they will challenge our logistics from the point of need, all the way to the end, and everywhere in between. So, looking at the Indo-Pacific, we are going to be fighting or responding as the away team. Geography is not on our side."

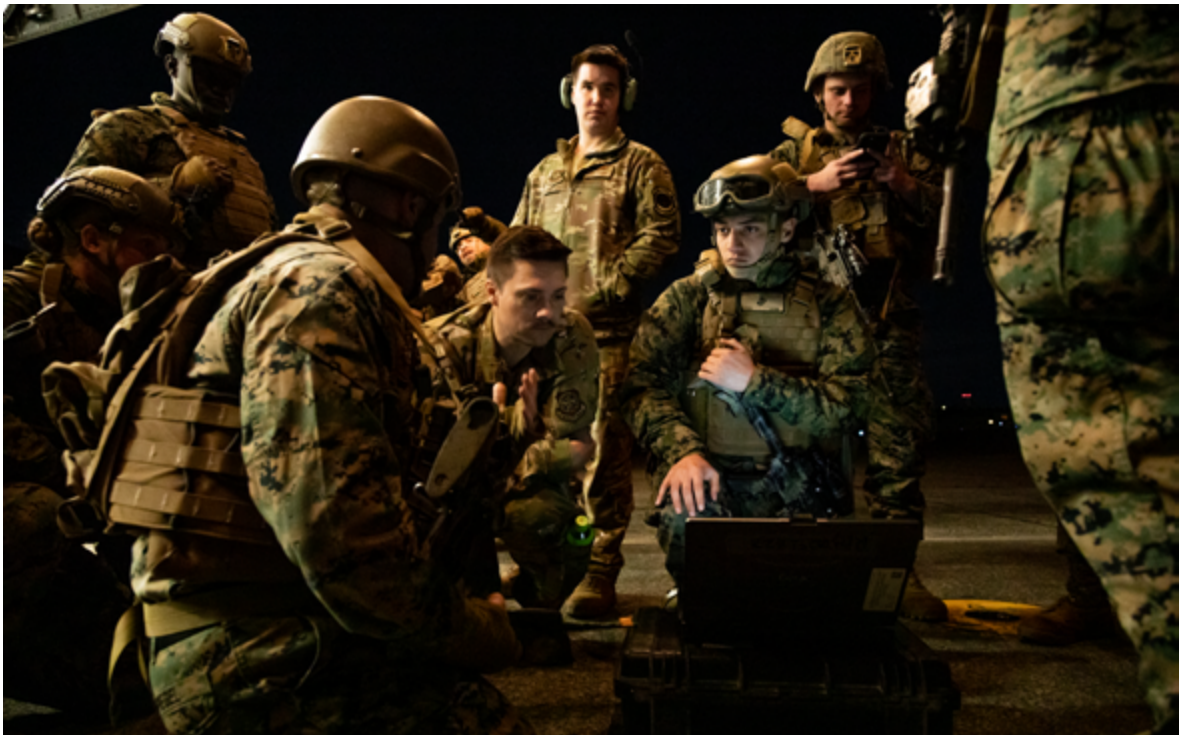
Joe Blanton: "There are challenges with supply chains and the freedom of maneuver, but we also have to look at where we're able to stage. We need to be able to have staging locations in as many places as we can, which is not easy to do. To me, one of the biggest challenges is having that forward footprint, working with partners who are already there to have our supplies forward.

Looking at the Pacific region in particular, time and distance are also a challenge. It takes time to get around the theater, so we need to do things faster. We have to find ways to expand our footprints, create efficiencies, and deliver capability and capacity faster than we have in the past."

5. What technologies or innovations do you think could advance contested logistics?

MG Gardner: "We are absolutely working on autonomous air, ground, and water resupply capabilities. Autonomy enables us to take the human out of the loop when delivering supplies forward… If I send an autonomous watercraft, truck, aerial resupply, or even space resupply vehicle to deliver supplies forward to a combat formation, I just increased my options, and more importantly, took humans out of a routine resupply mission and put humans to do what humans do best for the warfighter, which is think.

The next thing we need, and this is a great lesson from Ukraine, is advanced manufacturing. By reverse engineering repair parts and then 3D printing advanced manufacturing, we can quickly repair equipment utilizing a fix-forward model. If we can 3D scan something, figure out how to make it, send a data file, and then 3D print it, we can save a significant amount of time. Of course, we'd need to figure out how to safeguard intellectual property, which I'm confident there's a way to do it.



DVIDS | LANCE CPL. MATTHEW MORALES

Another part that we are trying to implement now is tele-maintenance. We've been doing telemedicine for years, but we don't really do that well with maintenance. We've also learned this through the Ukrainians. Through tele-maintenance, a mechanic in another country can walk a forward technician through how to repair a vehicle.

The last technology that we need to work on is our energy management. The things that enable us to see data better or to shoot farther use a lot of power. To create power today, we use a lot of gas, which is not the best way to do things. As we develop alternate sources of power, it reduces the need to move fuel forward. If I can harness wind, or sea, or solar energy to power my tactical operation centers, then I don't have to move fuel forward to power a generator. Similar to hybrid power on vehicles, if I can extend the range of a vehicle and the amount of time that it's able to operate, I can reduce the demand for logistics because I've got better energy usage forward on the battlefield."

BG Upton: "As I mentioned before, I think autonomy is a huge part of maintaining an advantage and operating in a contested environment… There's been an explosion globally with unmanned aerial systems in the last 15-20 years. Now I think there's a huge opportunity in the evolution of unmanned technology for systems to move heavier cargo. I'm not just talking a couple hundred pounds, I'm talking thousands of pounds… With autonomous systems, I don't have to put a human at risk, and the uncrewed system doesn't need to rest. I just have to make sure the system is maintained and powered so it can keep moving.

There are also a lot of technologies out there that will reduce demand from our military formations. We're thinking about how to make our engines more fuel efficient.. For example, using hybrid engines so you still have the power you need, but you have better fuel consumption. Now spread that out over the entire Army, and that's hundreds of trucks consuming a lot less fuel in the same amount of combat time… We want to use technology to reduce demand for what we're consuming, so that same formation is still lethal but consumes less water or less fuel. For example, maybe we can make drinkable water right where it's being consumed.

I think there's a lot of opportunity in the power space beyond what we traditionally think of. The Army of tomorrow will absolutely need fossil fuel-based power, but I think there's an opportunity for micro nuclear reactors to power things on the battlefield. Maybe not at the tactical edge right away, but these micro reactors could provide localized power that then can be exported out to an internalized grid."

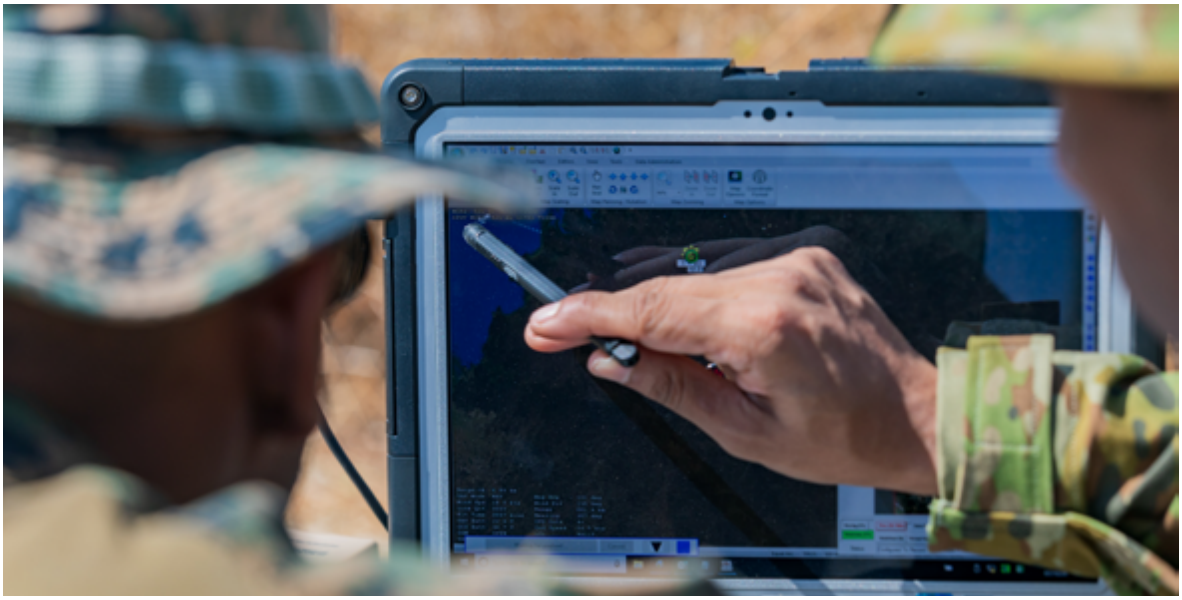
> **"I think autonomy is a huge part of maintaining an advantage and operating in a contested environment."**
>
> — BG Shane Upton

COL Adams: "It's not within my field to say which technology is or isn't the most promising, but I can say, just as an observer, that I'm optimistic about advanced and additive manufacturing. I see more and more promising applications for this in the industrial capability world… Before, additive manufacturing was almost exclusively limited to just small plastics. Now we're using really high-grade metals."

LCDR Hamilton: "Commander Todd Green from the Naval Academy wrote about his concept called NightTrain, which uses semi-submersible vessels to move shipping containers across long distances and contested environments. NightTrain takes the narco-sub-style low-profile vessel concept and adapts it for military use. Narco-subs are basically built in the middle of the jungle in a couple of weeks and at low cost. Yet they can move 10-20 tons of cargo from South America across the globe. These are very capable platforms, and they're incredibly difficult to find… So, if you want to continue to move things around when there is an adversary actively looking for it, we should look at who is actually doing it effectively. This is probably the best overall contested logistics platform, considering it's just a boat that sits low in the water and it's painted blue. It has no advanced countermeasures. It just sits low to the water and moves slowly, but it works."

Joe Blanton: "Predictive analytics is a key innovation. For example, during the ground war in Iraq and Afghanistan, we had warehouses of maintenance items, so maintenance activities there could be very responsive. When a vehicle went down for maintenance, we could repair it. Whereas in [the Indo Pacific], we won't have the luxury of having that volume of pre-stage and forward-stage material. Now, with predictive analytics, instead of maintaining a vehicle on a time-based schedule, we can maintain it based on the actual wear on the vehicle. Much like your personal automobile, the check engine light comes on to tell you something is wrong. We're putting sensors and technology into ground vehicles now that can tell you something is about to happen to the vehicle. With [predictive analytics], you can see in real-time the status of your fleet and respond in advance of a maintenance issue. When coupled with a smarter supply chain, you can push the material you need to a precise location based on a predictive need or demand for those maintenance materials.

I'll also add in Zero Trust. It's not just a cybersecurity thing. Looking at [Zero Trust] from the perspective of enabling interoperability, the more seamlessly we communicate with our mission partners in all spaces, whether it's maneuver, intelligence collection, or logistics, [Zero Trust] is going to make all of this better, faster, more streamlined, and more integrated. Anytime we can truly integrate our mission partners into our formations, functions, and processes, the better off that coalition is going to be."



DVIDS | CPL. MIGEL REYNOSA

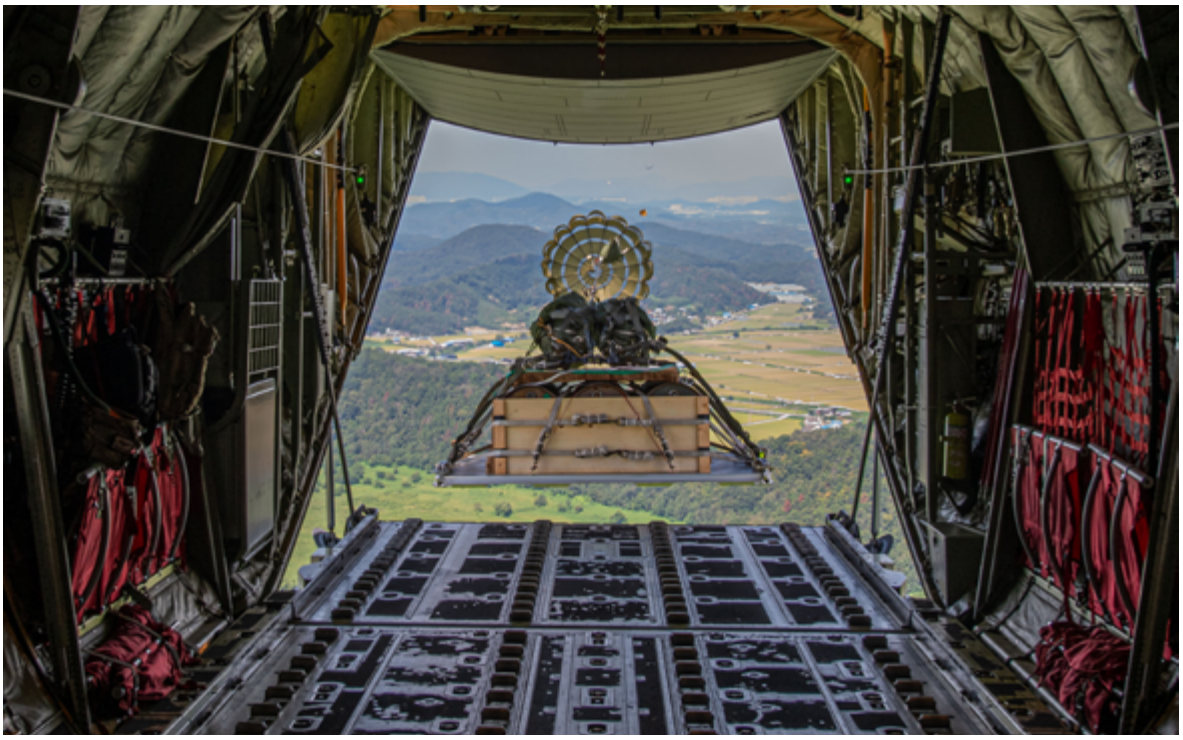
6. What are your expectations regarding vendor support to ensure seamless logistics in a contested environment?

MG Gardner: "Number one, I need industry to work through the process of getting secret clearances. I know that sounds simple, but it's not. If I could get more industry at the secret level, then I could have a collaborative discussion over how to support forward operational units. Let's be honest, our industry partners do this every day. They may already have potential forward sites and capabilities that I'm not privy to. If I could get us in the same room and lay out how we think we could support in a crisis, we could better collaborate over capabilities and requirements.

I think the second thing we want to do is change our acquisition and contracting processes. The processes are not helpful for rapid collaboration. Quite frankly, some of our federal acquisition and regulations are cumbersome. The future contested logistics environment is going to be all about speed, who can think and act the fastest... With our current system, we end up missing opportunities to make changes because we're still messing around with contracting language.

We also need scalable contracts… These build in flexibility and depth over time so that instead of asking for a million gallons of fuel for a 60-day period, I can ask for 10 million gallons over a 365-day period. This way, if conditions change, I've already got the contract in place… We're working with industry on what's a reasonable amount of fiscal requirements to ensure profitability, but also retainability of that scalable contract."

> **"The future contested logistics environment is going to be all about speed, who can think and act the fastest."**
>
> — MG Gavin Gardner



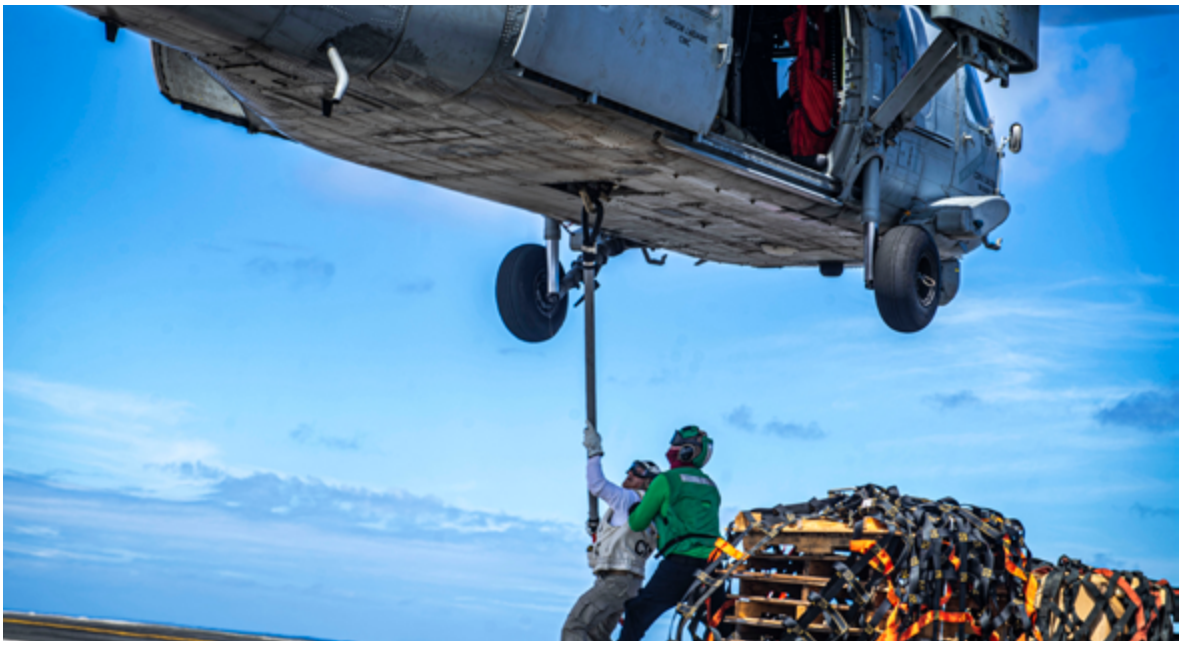
DVIDS | STAFF SGT. TRISTAN TRUESDELL

BG Upton: "The first expectation upfront is that we have to look at those imperatives I talked about. We have to do that in conjunction with our industry partners. For example, if one of our manufacturers of a capability we've given our war fighter has a forward deployed supply chain activity that's in X location in the world, we need to have full visibility of where that's at and be able to use that rapidly to counter some of the challenges I brought up earlier. The Army needs to coordinate with industry so when we put something in X location, we know where industry has their resupply warehouses and manufacturing facilities. We've got to look at that through a much different lens, as that must be completely nested and interwoven… Industry has to help with that, so we have to do better at communicating with one another on investments.

I truly think of our tech industry, the innovation of America, our companies, and entrepreneurs as a superpower. I think we need to look at the electromagnetic spectrum to be able to operate in a contested environment. Autonomy and unmanned systems communicate and produce collaborative behaviors. Using autonomy on watercraft and in the air can really help us, but we also need to work with industry to diversify our distribution network and give the enemy multiple dilemmas while still providing us the means, methods, and modes to get critical items like ammo, fuel, medical supplies, and repair parts to that tactical edge on time and on target. We need industry to help us better manage these systems, see ourselves better, and dynamically go from one frequency of communication to another, similar to how our cell phones switch from a Wi-Fi network to a cellular network.

Lastly, I want industry to compete... I think having one big vendor is not where we're going. Technology is moving too fast to lock ourselves into these long-term agreements. Technology matures in days and weeks, not months and years."

COL Adams: "Logistics in a contested environment won't be seamless. Industry needs to be patient with us, and they need to hear that. We are going to be in a moment of crisis in a full-scale conflict, and need production from the defense industrial base, and our needs will be varied and also time sensitive. We don't expect this to be seamless. We just ask industry to be patient with us… Our director is laser-focused on four imperatives: people, precision, posture, and partnerships. In order to enhance the posture of DLA, we're getting after the partnerships piece. Partnerships are an absolute imperative. We want to partner with the defense industrial base to better articulate what we're going to come to them with so that we give them as much lead time as possible. Also, whoever we contract with, we need to know their sub-contractors and all the way down to their source for raw materials so that we know truly who we're doing business with, and that we have end-to-end visibility of our supply chains."



U.S. DEPARTMENT OF DEFENSE | NAVY PETTY OFFICER 2ND CLASS HANNAH KANTNER

LCDR Hamilton: "There are also some other things that we are looking at. Narco-subs move very slowly, but there's also sea-skimming wing-in-ground effect maritime craft. They're not aircraft, but they can move cargo and personnel around the theater and are much less vulnerable to hostile threats due to their low operating altitude and higher speeds. They could even be used for casualty evacuation and search and rescue in the middle of the ocean, which we'll likely need to, and nothing else can do it right now effectively…

I'd love to see more vendors picking up narco-sub-style, inexpensive-but-effective concepts and building them. One thing that I keep trying to stress to industry is that the systems they're building are great, but logistics is about managing scarce resources effectively. We don't want to see platforms being built that are too exquisite and require very niche technology, when we could use something as simple as a shipping container. I'd love to see more things made out of plywood, cardboard, chicken wire, spray foam, and other things that are an order of magnitude less expensive and available worldwide. You'll hear a lot of people say, "We want attritable systems." But what do we mean by the word attritable? By my definition, it's got to be something that's more expensive for the enemy to go find and stop than it is for them to ignore. Whether the enemy expends a missile on it, or it delivers its cargo, it's still a success."

7. Is there anything else you'd like to add that we haven't covered?

MG Gardner: "Human life is the most important thing to us. People are our most important resource. We need to leverage technology and the industrial capacity of the United States to make it affordable and scalable to build autonomous vehicles. Just like we did during the arsenal of democracy during World War II, we need a continuous stream of future Liberty Ships that are affordable to achieve economy of scale. Much like Ukraine does today with UAVs to preserve Ukrainian soldiers' lives, we need to do the same thing.

My last note is that we're tackling contested logistics as a part of an entire joint force. It's not just an Army fight. It's not a Marine or Navy fight. All the services, along with our allies and partners, are working together to provide sustainment options needed for a contested logistics environment."

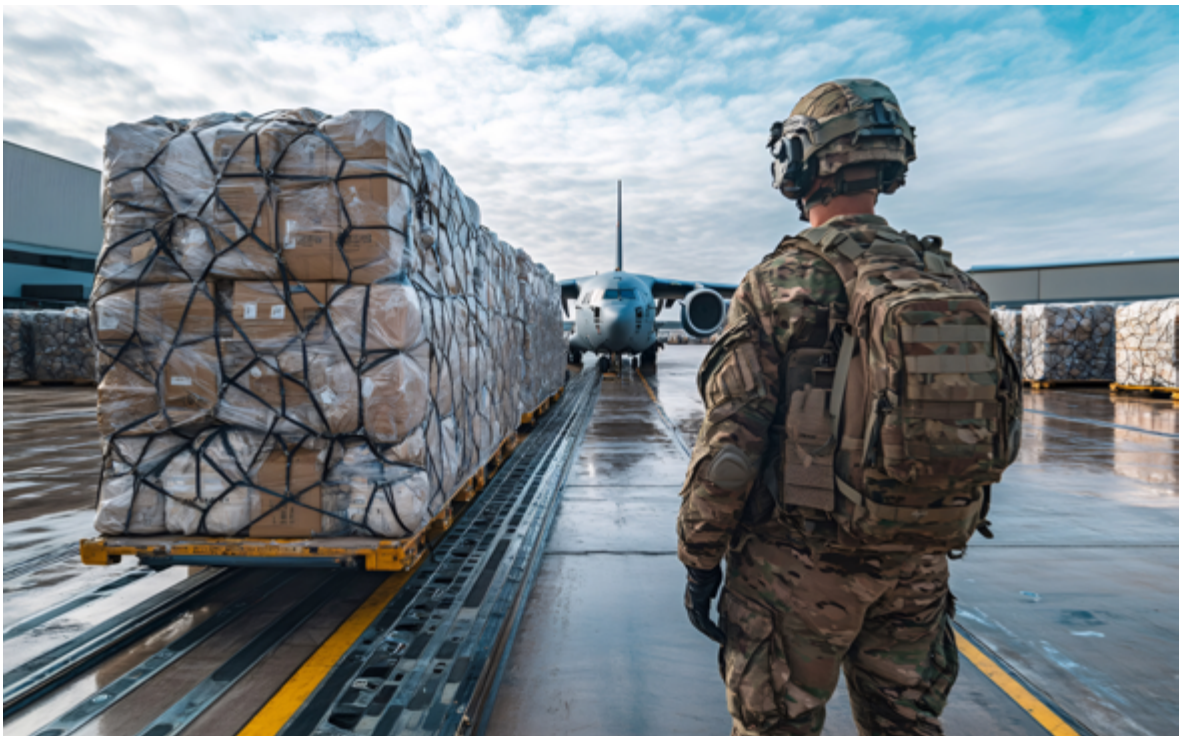
COL Adams: "There has been no greater fighting force in the written history of the world than the United States military in its current form. If an adversary thinks it has the ability to contest our logistics, wait until we're upset. We will punch back, and we will inflict the same type of chaos upon our adversaries."

LCDR Hamilton: "We also want to reduce our reliance on the supply chains that we have right now. We've been working a lot with national labs, innovation organizations, and various companies on advanced manufacturing, specifically 3D printing. Most crises are typically over in a matter of days, but if equipment goes down and it takes weeks for a part to ship from [the continental United States] to the point of need, we lose relevance at the most critical moment. The goal isn't to completely replace the supply chain, but if we can print a part or a temporary replacement in a matter of hours, we succeed as logisticians: the right thing at the right place at the right time.

Ultimately, I think resourcing is the biggest problem when you think about contested logistics… Even though there's a lot more discussion happening about contested logistics and the importance of it, an organization's values are really shown by what is actually resourced, and logistics innovation tends to fall below funding cutlines when budgets get tight."

FINAL CONSIDERATIONS

In today's battlespace, logistics is not merely a support function—it is a frontline concern. As adversaries develop sophisticated methods to target supply chains, contested logistics has become a defining challenge of modern warfare. The insights provided by the interviewed experts underscore the urgent need for logistics capabilities that are agile, distributed, and resilient under threat. The U.S. military's desire for innovative solutions reflects an understanding that future success depends not only on combat capabilities but also on the uninterrupted flow of critical resources. Ultimately, the ability to sustain logistics in contested environments will be a decisive factor in projecting power and prevailing in war.



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