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The following is an interview with General Glen D. VanHerck, USAF Commander, North American Aerospace Defense Command (NORAD) and United States Northern Command (USNORTHCOM). In this interview, General VanHerck discusses U.S. homeland defense posture and technology developments that are likely to affect future U.S. missile defense capabilities. He also comments on the importance of developing globally-integrated strategies and plans, the need to improve the defense acquisition process, efforts to share information with allies and partners, and the role of space in deterrence and defense.

An Interview with
General Glen D. VanHerck, USAF
Commander, North American Aerospace Defense Command (NORAD) and United States Northern Command (USNORTHCOM)

Q. You have described homeland defense as "the core mission of both USNORTHCOM and NORAD." In your experience, what is the most neglected aspect of U.S. homeland defense?

A. The greatest risk for homeland defense stems from our inability to change at the pace required by the strategic environment. Our lack of domain awareness, limited timely access to forces that are ready, trained, and equipped to operate throughout our areas of responsibility, including the Arctic, and a lack of resilient infrastructure, limit the capability of the U.S. military to fight in and from the homeland while protecting our ability to project power forward.

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Q. What does Russia's missile use in Ukraine mean for the future of U.S. homeland missile defense programs?

A. Russia's illegal and immoral actions in Ukraine increase the very real risk of miscalculation and the conflict expanding beyond its current boundaries, placing the homeland at greater risk. We have seen Russia employ at least one type of its newest hypersonic technologies in combat in Ukraine, and we continue to watch Russia test and exercise highly capable weapons in Russia and in the Atlantic and Pacific Oceans, which pose new challenges to our defenses of maritime and air approaches to the homeland.

Q. The Command is in the process of developing the "Homeland Defense Design 2035." Why 2035? And can you discuss any preliminary findings from this effort?

A. We actually just completed Homeland Defense Design Next (2035). This is a forward-looking concept that captures my vision of how to start force design efforts now, to ensure we outpace our competitors in 2035. The vision aligns with projected threat developments beyond the Department's force development window of 2-7 years. This 15-year design timeframe allows for development and maturation of new concepts and technologies to address those projected threats to the homeland. A driving premise of this concept is that, while nuclear deterrence remains foundational to our strategic deterrence and homeland defense, projected developments in our strategic competitor's kinetic and non-kinetic capabilities exploit an increasing gap between our nuclear deterrence and conventional homeland defenses. HDD Next seeks to address this gap.

For example, in a future crisis or conflict, a potential exists for adversaries to disrupt our power projection from North America. Our lack of domain awareness, lack of available and ready forces, and lack of resilient infrastructure increase this risk. HDD Next is focused on countering these limitations. It defines and energizes the development of capabilities to increase our domain awareness, information dominance, and decision superiority.

As our competitors sprint to develop advanced cyber, maritime and hypersonic technologies, HDD Next recognizes our requirement to evolve homeland defense from a regional approach to one of globally-integrated layered defense. Our analysis of future conflict scenarios tells us we should minimize the use of expeditionary platforms and increase use of un-crewed autonomous capabilities, enabled through artificial intelligence and machine learning, to deter, and if necessary deny or defeat, threats to the homeland. Our analysis confirms that the United States and Canada must move quickly to improve domain awareness from the seafloor to space and cyberspace for all approaches to North America.

Q. What modern technology (U.S. or adversarial) do you see as potentially the most game changing for U.S. missile defense efforts in the next 5-10 years?

A. The only thing I can never give the Secretary of Defense and President enough of is time and decision space. More time and decision space allows for the development and employment of deterrence and defeat options, both kinetic and non-kinetic to include the use of the information space. The only way that we will be able to provide more time and decision space is to process data and information more quickly and disseminate the information to decision makers. NORAD and USNORTHCOM are shifting away from solely missile defense to missile defeat, which includes endgame kinetic defeat to defend select critical infrastructure but also focuses on options early in the kill chain and preferably left of launch.

Homeland defense does not start in the homeland. It starts with my fellow combatant commanders and our asymmetric advantage of our network of allies and partners generating effects forward, both day to day and in crisis and conflict, through a network that enables globally integrated layered defense. By being able to operate within a potential adversary's observe-orient-decide-act (OODA) loop daily, we will create doubt in their minds making them question if they could ever be successful which equates to deterrence. And if deterrence fails, we will be able to create defeat and defend options more quickly enabling decision superiority. NORAD's and USNORTHCOM's ability to rapidly integrate systems, software, and platforms is critical to maintaining our competitive advantage, and we continue to prioritize digital transformation to enable agile decision-making for our leaders.

Q. What will be the role of autonomous systems in U.S. missile defense efforts? Do these technologies have the potential to increase the chance of miscalculation?

A. I believe there is a role for semi-autonomous systems in missile defense, and more broadly in defense of the homeland in general. Fully autonomous systems present an increased risk of removing the decision-maker from engagement decisions, which is why I assess that we will never fully automate our defense capabilities as a human must always be the check and balance on matters of homeland defense. Our new HDD-Next incorporates both maritime and airborne un-crewed, semi-autonomous systems capable of providing domain awareness and generating kinetic and non-kinetic effects in the defense of critical infrastructure. Today we compete with the Joint Force for common platforms utilized for forward power projection. Our HDD-Next takes us in a direction to utilize less of the force required for forward power projection and in a direction of more efficient and effective force design for the future of Homeland Defense, including in the Arctic.

Q. You have testified that "our competitive edge is eroding" and "The successful defense of North America requires the Department of Defense to move beyond outdated assumptions and plans that do not fully reflect competitor capability, capacity, and intent to threaten the

homeland." What specifically do you believe DoD needs to do to move beyond its current assumptions and plans in order to arrest the decline in U.S. competitive advantages?

A. First, we must move away from regionally-focused strategies and plans to globally-integrated and all-domain strategies and plans. Today's problems are all-domain and global yet we continue to develop regionally-focused solutions. I believe that the days of a single supported commander are over and that it's likely we'll have multiple supported commanders simultaneously. We know that in a crisis with the PRC that we'll still have to deter other actors such as Russia, and likely have to continue to deter and defend from Violent Extremist Organizations (VEOs). Rather than build a regionally-focused plan that in some cases consumes 100 percent of Joint Force elements, I advocate for strategies and plans that start with global end states, global risk, and global resourcing, and then create realistic and executable globally-integrated strategies and plans that won't require us to adjudicate resources in crisis, which is where we would be today.

Second, our acquisition processes have served us well for the last four decades but yesterday's processes are too slow in today's digital and virtual world. Processes designed to build and field planes, ships, and tanks need to be adapted to field software-driven solutions. The use of virtual and data-driven capabilities should lead to parallel development and testing vice serial development and testing as we do today. We must go faster and accept more risk. Learning must include accepting failure, and moving on.

Finally, I believe that data and information are strategic assets. We must adapt to this reality and move quickly to field Combined Joint All-Domain Command and Control (CJADC2) capabilities and to share data and information across the stovepipes that exist today. Again, the only thing that I can never give enough of to the President or Secretary of Defense is time and decision space. We must link existing platforms and enable data-sharing with multiple commands, interagency, and international partners. Much of the data we need exists today, but we can't access it because of bureaucratic and organizational stovepipes. It is possible to rapidly improve domain awareness today if we streamline information sharing. NORAD and USNORTHCOM have demonstrated this potential through innovative programs such as Pathfinder and Northstar, and demonstrations including the Global Information Dominance Experiments (GIDE). It is especially important that we share information faster with our global network of Allies and partners, as they support a globally-integrated, layered defense of the homeland. This network of Allies and partners is our asymmetric advantage.

Q. Are U.S. missile defenses keeping pace with missile threats from North Korea and Iran? Are there additional missile defense activities the United States should pursue to ensure the security of the homeland against such threats?

A. I am confident in our current capability to defend the homeland against a limited ballistic missile threat from North Korea, however the pace and advancements we are seeing in North Korea's missile program are concerning to me. Advancements such as the Long Range

Discrimination Radar (LRDR) and Next Generation Interceptor (NGI) are crucial for maintaining U.S. capability in the near-term and must be fielded in a timely manner. In the long term, U.S. policy must continue to address these evolving threats and inform investment decisions to maintain our advantage.

Q. Some believe the United States should continue to rely exclusively on nuclear deterrence to protect the homeland against nuclear threats from Russia and China. Others believe continued U.S. homeland vulnerability to great power nuclear threats is increasingly risky and should be reconsidered. What is your view on defending the homeland against missile threats from Russia and China?

A. Strategic deterrence remains the foundation of homeland defense and it should remain so in the future. With that said, I do believe that integrated deterrence, or the use of all levers of our government, must continue to be part of homeland defense and this includes deterrence by denial which missile defeat falls into. Clearly this is a policy decision and our policy must always adapt to the growing threats from our potential adversaries. I am comfortable with today's policy that primarily relies on nuclear deterrence for ballistic missile threats from the PRC and Russia, however, as potential adversaries continue to develop capabilities to hold North America and our homeland at risk, I assess an increased risk to the strategic stability long assured by nuclear deterrence. We need policy to evolve to address these challenges, and NORAD and USNORTHCOM need the domain awareness to provide national leaders with the information and options they need.

Q. The role of space in homeland defense efforts has been limited primarily to sensors that can provide early warning and tracking of missile launches. Is it time to consider more robust space-based missile defenses, possibly to include space-based interceptors or directed energy systems?

A. Space based missile defense or defeat is clearly a policy decision. With that said, and as I stated before, policy must continually be assessed based on threats to our homeland. Our potential adversaries are not taking anything off the table and I don't believe that we should unilaterally do so either. I do believe that the space domain will play a more crucial role in the future of deterrence and defense. Today, U.S. Space Command manages the sensor network that provides NORAD and USNORTHCOM missile warning data, and without USSPACECOM doing that, I wouldn't have the domain awareness I need to execute the commands' missile defense and threat warning missions so crucial to continuity of government and nuclear force posture, both crucial to overall deterrence. Investments in space-based sensors are increasing the military's ability to detect a multitude of threats including hypersonic or other advanced threats. But missile defense also requires options to defeat or deter threats before they launch instead of focusing only on kinetic engagement. These options may be space-based in the future, and we may also have terrestrial options available now if we

relook the processes to share information and integrate targeting across combatant commands and Allies and partners.

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