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“Nonstrategic Nuclear Weapons”. Published by Congressional Research Service; Updated January 17, 2019

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In 1991, the United States and Soviet Union both withdrew from deployment most and eliminated from their arsenals many of their nonstrategic nuclear weapons. The United States now has approximately 500 nonstrategic nuclear weapons, with around 200 deployed with aircraft in Europe and the remaining stored in the United States. Estimates vary, but experts believe Russia still has between 1,000 and 6,000 warheads for nonstrategic nuclear weapons in its arsenal. The Bush Administration quietly redeployed some U.S. weapons deployed in Europe, while the Obama Administration retired older sea-launched cruise missiles. Russia, however seems to have increased its reliance on nuclear weapons in its national security concept.

Analysts have identified a number of issues with the continued deployment of U.S. and Russian nonstrategic nuclear weapons. These include questions about the safety and security of Russia’s weapons and the possibility that some might be lost, stolen, or sold to another nation or group; questions about the role of these weapons in U.S. and Russian security policy; questions about the role that these weapons play in NATO policy and whether there is a continuing need for the United States to deploy them at bases overseas; questions about the implications of the disparity in numbers between U.S. and Russian nonstrategic nuclear weapons; and questions about the relationship between nonstrategic nuclear weapons and U.S. nonproliferation policy.

Some argue that these weapons do not create any problems and the United States should not alter its policy. Others argue that the United States should expand its deployments of these weapons in response to challenges from Russia, China, and North Korea. Some believe the United States should reduce its reliance on these weapons and encourage Russia to do the same. Many have suggested that the United States and Russia expand efforts to cooperate on ensuring the safe and secure storage and elimination of these weapons; others have suggested that they negotiate an arms control treaty that would limit these weapons and allow for increased transparency in monitoring their deployment and elimination. The 115th Congress may review some of these proposals.

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NUCLEAR WEAPONS

VOA (Washington, D.C.)

Article Suggests Nuclear Sharing with Japan, S. Korea to Deter N. Korean Threat

By Kim Dong-hyun

July 30, 2019

WASHINGTON - Christy Lee contributed to this report which originated on VOA's Korean Service.

The National Defense University, an institution funded by the U.S. Department of Defense, has published a journal article suggesting Washington should share its nuclear tactical missiles with Japan and South Korea to deter North Korea's growing nuclear threat to East Asia and the U.S.

"The United States should strongly consider ... sharing of nonstrategic nuclear capabilities during times of crisis with select Asia-Pacific partners, specially Japan and the Republic of Korea," according to "Twenty-First Century Nuclear Deterrence," published by the university in the current issue of Joint Force Quarterly (JFQ). The Republic of Korea is the official name for South Korea.

Publication guidelines on the university's site say "The views expressed by this article are those of the author and do not reflect the official policy or position of the National Defense University, the Department of Defense, or the U.S. Government."

Sharing American nuclear capabilities with Japan and South Korea would involve deploying its nuclear weapons in the territories of its two allies in East Asia so that the weapons can be used in such time as a nuclear war, as the U.S. does with five member states of the North Atlantic Treaty Organizations (NATO), according to the article.

Japan and South Korea are under the U.S. nuclear umbrella that promises defense against threats. The U.S. maintains military bases in both countries, which are currently embroiled in a trade dispute colored by historical animosities.

The article's release on July 25 coincided with North Korea's launch of two short-range missiles. Then, early Wednesday local time, South Korea's Joint Chiefs of Staff said that North Korea launched multiple unidentified projectiles off the east coast of its Hodo Peninsula.

The four authors, who serve in the U.S. army, navy, and air force, suggest U.S. nuclear weapons deployed in Japan and South Korea would be used for exigent purposes during war but would mainly serve as an extended deterrence against North Korea's use of nuclear weapons in peacetime, effectively preventing it from launching a nuclear attack.

The article suggests American nuclear sharing with Japan and South Korea could be undertaken in a manner similar to an agreement the U.S. signed with five NATO member states.

US weapons

Currently, the U.S. shares approximately 180 tactical nuclear weapons such as B61 nuclear bombs with Belgium, Germany, Italy, the Netherlands, and Turkey.

NATO is a multilateral alliance now composed of 29 member-states from North America and Europe established in 1949 by 12 countries to serve as a collective defense against emerging threats in the region.

American nuclear weapons have been deployed to the five NATO countries since the mid-1950s in an arrangement known as nuclear sharing. Nuclear sharing allows these countries without nuclear

weapons to use American deployed nuclear weapons in case of war at which time the Non-proliferation Treaty (NPT) will be disabled.

The NPT, which entered into force in 1970, prohibits signatory states from transferring and accepting direct and indirect control of nuclear weapons.

The JFQ article came out as the process of denuclearization diplomacy with Pyongyang, stalled since the Hanoi summit in February, has started to inch forward.

In June, North Korea's leader Kim Jong Un and U.S. President Donald Trump met for an impromptu summit at the inter-Korean border in June where they agreed to resume denuclearization efforts. North Korea has been reluctant to engage in the working-level negotiations since Hanoi where Washington rejected Pyongyang's demand for sanctions lift.

The JFQ authors highlighted that the U.S. may face "difficulties in shaping [North Korean] behavior" if it does not give up its nuclear program.

"If left unchecked, North Korea will continue to threaten the East Asian region and perhaps one day the United States itself," they noted.

North Korea threat

On June 25, North Korea fired what South Korea called new types of short-range ballistic missiles into the Sea of Japan, the body of water between the Korean peninsula and Japan, rattling the East Asian countries.

The next day, Pyongyang said it had tested a new type of "tactical guided weapon" intended to send a "solemn warning" to South Korea to end its joint military exercises with the U.S.

North Korea said the weapons it tested had "rapid anti-firepower capability" and "low altitude gliding and leaping flight orbit...which would be hard to intercept."

In May, North Korea tested three short-range missiles off its east coast that experts considered to be similar to a Russian Iskander, a nuclear loadable short-range ballistic missile.

The article said, "Considering North Korea's history of aggressive nuclear rhetoric and recent missile tests," sharing U.S. nuclear weapons with its regional allies "would provide renewed physical evidence of U.S. resolve."

The article also stated that nuclear sharing with Japan and South Korea will strengthen a "military partnership through joint-regional exercises" necessary to deter North Korea.

However, according to Gary Samore, former White House coordinator for arms control and weapons of mass destruction during the Obama administration, the time may not be ripe for the U.S. to propose nuclear sharing with Seoul and Tokyo because of an on-going trade row between the two.

"My sense is that [in] both South Korea and Japan, there is very little political support for such a step at this time," said Samore, currently senior fellow at the Harvard Belfer Center's Korea Project. "It could change, but, for now, I think it would be very controversial."

Seoul and Tokyo have been involved in a trade dispute after Japan placed export restrictions on three high-tech items South Korean companies use to manufacture parts used in smart phones and other high-tech devices. The trade dispute is widely seen as rooted in Korean anger at Japan for decades of colonization and occupation from 1910 until Japan's 1945 surrender to the U.S. to end World War II. During that period, many Japanese companies used Korean forced labor.

Boycotts against Japanese-made products have been widespread in Seoul, and Japan has rejected Seoul's call for talks to resolve the dispute.

Samore said, "There may come a time when the domestic politics in South Korea and Japan have changed especially when North Korea continues to maintain and advance nuclear weapons and (a) ballistic missile program." He added, "And then at that point it would make more sense."

<https://www.voanews.com/east-asia-pacific/article-suggests-nuclear-sharing-japan-s-korea-deter-n-korean-threat>

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Breaking Defense (Washington, D.C.)

Competition (with China) IS the New Deterrence, US Military Leaders Say

By Theresa Hitchens

July 31, 2019

OMAHA: "The most important word in the [National Defense Strategy] is compete," Gen. Timothy Ray, commander of Air Force Global Strike Command, told reporters here today. And senior officers speaking at Strategic Command's 10th annual deterrence conference here fixated on China as the likeliest US adversary.

After years of focusing on the terrorism threat, Ray said the US has "not thought about what we would call an adversary's theory of victory as deeply as we should. On the hard end, the worst end, it's about being put on the horns of dilemma: where you are going to either walk away because you can't compete or you're going to stick your face in a woodchipper." Obviously, he said, the US and the West do not wish to find themselves in that situation.

To avoid that, the US has to be ready and able to compete with its rivals in shaping the global strategic environment before conflict starts. "Your strategy has to address the strategy of your adversary," he said, and in today's world that includes thinking about how to compete in new military domains such as space and cyber, but also in the economic arena. "Do you have to win every event? I believe you don't. You have to win the ones that count and you have to be honest about which ones count and which ones don't," he said.

Vice Adm. David Kriete, deputy STRATCOM commander, expanded on the approach from the, well, strategic, level: "Strategic deterrence is active deterrence; it's very dynamic. ... Deterrence today must also occur across all domains: air, land, sea, space and cyber."

On the other hand, Ray cautioned that the US has to avoid mirror imaging. "Not all our rivals have all the tools" to be able to understand how the US might respond to a situation, and what would escalate a crisis, he warned.

Indeed, Rear Adm. Michael Brooks, head of STRATCOM's J2, the Intelligence staff, expressed concern that China (and Russia) have "intentions" in the space, cyber and electronic warfare domains that could in future potentially compromise US nuclear command and control — something that US nuclear experts of all political stripes agree raises the risks of unwanted crisis escalation. There have been a number of US reports — including the January report by the Defense Intelligence Agency on threats to US space forces — that suggest China (and perhaps even Russia) may be willing to attack US early warning satellites that play key roles in nuclear deterrence.

And, despite the focus on competition, there remains widespread concern among senior US military leaders about China's nuclear posture.

“China has doubled its nuclear arsenal in the last decade, and is on track to double it again in the next decade,” said Brooks. “It’s a little bit concerning, the pace of change.”

“China has been on a clear trajectory whereby they’re increasing the numbers of nuclear weapons that they field, they’re increasing the number and diversity of the delivery systems; they’re working on fielding a triad,” Kriete said, adding that at the same time “increasing their nuclear weapons production capacity.” That build up, he said, is “directly tied” to the long range objectives of the leadership in Beijing that includes eventually exerting Chinese influence on a global scale.

According to Jonathan Ward, a regional expert at consulting firm Atlas Organization, those goals include “becoming the dominant empire in the region and the world” by 2049, the centennial anniversary of the Chinese Communist Party. Ward cautioned that the US cannot prevent China from “surpassing the United States as a global power” by military means alone; rather, he stressed, the competition is primarily now in the economic realm. This includes China’s ‘Made in China 2025’ strategy to ensure strong Chinese competitiveness in a number of key high-tech sectors, such as robotics and aerospace, that are now dominated by the US and others.

At the same time, Ray said that the US military cannot simply “spend our way out of this competition” with China. Rather, he said, the US must very carefully recalculate its international relationships and its responses. That includes understanding how you can keep an edge in geopolitics and economic competition that is sustainable, something that US political leaders “in Washington” especially have to focus on, Ray said. “You can try to set a pace in a race that you can’t keep, or you can pick the races in which you can set the pace at a rate where you can have a dominant hand.”

<https://breakingdefense.com/2019/07/competition-with-china-is-the-new-deterrence-us-military-leader-say/>

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National Defense (Arlington, Va.)

Pentagon to ‘Fully Pursue’ Development of Previously Banned Missiles

By Jon Harper

Aug. 2, 2019

Now that the United States has withdrawn from the Intermediate-Range Nuclear Forces Treaty with Russia, the Pentagon plans to move forward with a new set of conventional missiles that were previously prohibited by the agreement, according to Secretary of Defense Mark Esper.

The INF Treaty was brokered in 1987 in the waning years of the Cold War. It prohibited the United States and Russia from deploying land-based nuclear or conventional missiles — both ballistic and cruise — with ranges of 500 to 5,500 km. However, Washington has accused Moscow of cheating, and in response the U.S. withdrew from the arms pact effective Aug. 2.

“This withdrawal is a direct result of Russia’s sustained and repeated violations of the treaty over many years and multiple presidential administration,” Esper said Aug. 2 in a statement.

The Russian government has denied that it is in violation of the agreement.

“The facts are clear: the Russian Federation is producing and fielding an offensive capability that was prohibited,” Esper said.

Now that it is unshackled from the constraints of the arms control measure, the Pentagon plans to “fully pursue” capabilities that were previously banned, Esper said.

The Department of Defense had already commenced treaty-compliant research-and-development activities beginning in 2017, he noted.

“The department's initial research-and-development efforts focused on mobile, conventional, ground-launched cruise and ballistic missile systems,” Esper said. “Because the United States scrupulously complied with its obligations to the INF Treaty, these programs are in the early stages. Now that we have withdrawn, the Department of Defense will fully pursue the development of these ground-launched conventional missiles as a prudent response to Russia’s actions and as part of the Joint Force's broader portfolio of conventional strike options.”

President Donald Trump has been threatening to pull out of the treaty if Moscow did not come back into compliance. His decision to follow through is expected to be a boon for U.S. missile makers.

“For decades, we’ve been operating within the design constraints imposed by the INF Treaty,” Todd Harrison, director of the aerospace security project at the Center for Strategic and International Studies, told National Defense in October after Trump stated his intention to withdraw. A withdrawal “opens up a whole range of possible design options for missile forces that previously had not been available” in terms of range and flight trajectory, Harrison explained.

“Because you’re looking at some new-start programs, I think that there are opportunities for new companies to get into this market,” he added. “But we’re not talking about revolutionary technologies, ... so the big incumbents will have an inherent advantage because they will leverage missiles and propulsion systems they already have developed.”

Long-range precision fires is the Army’s top modernization priority. The service can now acquire new systems that previously would have been prohibited by the INF Treaty.

“These types of missiles are attractive in terms of their capabilities, in terms of imposing costs on Russia and China,” Harrison said. “I think in the long run we will end up developing and fielding large numbers of missiles that fall within this class.”

Arms control groups have opposed withdrawing from the treaty, arguing that it could lead to a dangerous arms race.

<https://www.nationaldefensemagazine.org/articles/2019/8/2/pentagon-to-fully-pursue-development-of-previously-banned-missiles>

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Defense News (Washington, D.C.)

Watch the Skies: How a US Base in Greenland Tracks Ballistic Missiles

By Valerie Insinna

Aug. 4, 2019

THULE AIR BASE, Greenland — On July 5, a Soyuz rocket blasted off from Vostochny Cosmodrome in the easternmost territory of Russia, carrying with it 33 satellites, including a polar-orbiting Meteor M2-2 weather satellite owned by the Russian government and a host of cubesats and nanosatellites launched on behalf of universities and commercial entities.

More than 3,500 miles away, the airmen of Thule Air Base in Greenland were watching, dispatching real-time reports to the Combined Space Operations Center, or CSpOC, at Vandenberg Air Force Base, California.

Located on the northwestern coast of Greenland, Thule Air Base is the U.S. military's northernmost base and the only installation north of the Arctic Circle. It is home to the 12th Space Warning Squadron, a cadre of Air Force officers and enlisted personnel that provide 24/7 missile warning and space surveillance using a massive AN/FPS-132 radar.

"In the case of the Russian launch, it was an advertised launch, and so information about the number of payloads and the launch location and intended orbit were published," said Maj. Jason Bullock, the 12th SWS' operations officer.

"We take that information and we use it to perform innovative mission planning to include computer modeling of how it will come through our coverage, and it helps us to task the radar in specific ways to direct energy in specific ways to ensure that we capture anything that comes through our coverage," he told Defense News in a July interview.

Thule's position on the globe and its radar's 240 degrees of coverage — which projects over the Arctic Ocean and Russia's northern coast — make it an ideal location to track intercontinental ballistic missiles and satellites in low-Earth orbit, including polar orbit satellites.

On a given day, the 12th SWS will record the trajectories of hundreds of satellites, including dozens of "high interest objects" that the CSpOC deems worthy of additional attention based on its country of origin, payload or mission, Bullock said.

It also keeps a constant watch for activities that may indicate the United States is under threat of nuclear attack via ICBMs or submarine-launched nuclear missiles.

Air Force Chief of Staff Gen. Dave Goldfein visited Thule for the first time July 20, accompanied by Defense News. In an interview after the trip, he said he was struck by the spartan conditions and harsh environment of the remote air base. In the summer, days last 24 hours, and the sun never sets. In the winter, the opposite is true, with no daylight for months.

Finding "happy lights" said to boost serotonin stashed in the corner of a conference room is not an uncommon sight, and airmen get used to having only sporadic cellphone and internet access.

There is no nearby town, so all airmen — who are deployed for one-year periods — live in dormitories. Cars, equipment and the base's 1960s-era generator are powered by JP-8 jet fuel. The base's solitary runway — while still operational — is in need of repair, and whole hangars lay abandoned and unusable, their floors cracked and uneven due to being built on permafrost.

The AN/FPS-132 radar operated by the 12th SWS, which Bullock said is roughly 10 years old, is one of the newer pieces of technology on-site and has also undergone periodic software upgrades since being fielded.

But basically the facilities at Thule are "sort of 1960s technology," Goldfein said.

"They're doing a great job of taking care of them. But how long do you keep them up and running with the harsh conditions they live with?" he wondered. "That's something I'll be talking to our installations and environments folks and civil engineers just to give me an update on what our way ahead is. This is critical terrain. We're going to be there for a while."

Besides being a critical site for missile defense and space situational awareness, Thule hosts the Defense Department's northernmost deep-water seaport and airfield. Those physical attributes are often overlooked when talking about the strategic importance of Thule, said Heather Conley, the

senior vice president for Europe, Eurasia and the Arctic at the Center for Strategic and International Studies.

“We have not thought more creatively about how to use Greenland,” Conley said.

“China has,” she added, pointing to the nation’s interest in building airports and research facilities in Greenland.

If the Air Force presses to modernize Thule’s infrastructure, it also will be on the heels of ongoing Russian efforts to do the same. The U.S. Defense Department’s new Arctic strategy, released in June, notes that Russia has “gradually strengthened” its presence in the region by refurbishing old airfields and infrastructure in the Arctic, establishing new bases along its northern coastline, and setting up a mesh of air defense systems, early warning radars and sensors.

“To ensure a credible deterrent for the Arctic, DoD must be able to quickly identify threats in the region, respond promptly and effectively to these threats, and shape the security environment to reduce or mitigate the prospects of these threats manifesting in the future,” the strategy states.

But although the strategy cites the challenges that Russia and China pose in the Arctic, it’s unclear whether the Department of Defense is ready make the investments in its Arctic bases necessary to maintain access and deter potential adversaries, Conley said.

“We need to move to implementation, but that’s where you don’t see the dollars in the budget,” she added.

Operating at the top of the world

On the top of a hill sits an austere building capped with two enormous radar faces. The site is home to the 12th Space Warning Squadron, but could easily be mistaken for a set from John Carpenter’s landmark 1982 horror film “The Thing.” Inside are airmen providing security and monitoring the radar feed, as is always the case.

The headquarters of the 12th Space Warning Squadron at Thule Air Base, Greenland. The 12th SWS operates the Upgraded Early Warning Radar, which provides missile defense and space surveillance. (Staff Sgt. Alexandra M. Longfellow/U.S. Air Force)

The headquarters of the 12th Space Warning Squadron at Thule Air Base, Greenland. The 12th SWS operates the Upgraded Early Warning Radar, which provides missile defense and space surveillance. (Staff Sgt. Alexandra M. Longfellow/U.S. Air Force)

No matter whether the 12th SWS is tracking a rocket launch or an ICBM, the mission starts with a cue from the Air Force’s Space Based Infrared System, or SBIRS, satellites, which can detect the heat signature of a launch. Then it’s time for the airmen of the 12th SWS to figure out how to best utilize the radar to gather as much information as possible.

“In the unlikely event that the radar believes it has detected a missile, it will go into sight-reporting mode and will direct extra energy on the object, and the crew will gather all information that’s available about the health of our system to determine if the sight report is valid, anomalous or under investigation,” Bullock said. The squadron will also collect information about the trajectory of the object; and if it’s a missile, what its impact location might be.

As data comes in from SBIRS, the 12th SWS will send a report to the Missile Warning Center at Cheyenne Mountain Air Force Station in Colorado Springs, Colorado, whose personnel will determine whether the object in question is a ballistic missile.

"As part of that, it's critical that we perform our reports in a timely manner," Bullock said. "We have very strict reporting requirements. Because by the time our radars detect an incoming missile, there is very little time to respond."

It's a high-pressure situation for the crews who work 12-hour shifts for three days at a time — and sometimes end up having to spend the night on-site when snowy weather makes it too dangerous to drive to and from the dorms.

The radar feed is controlled by three airmen, usually an officer who acts as crew commander and two enlisted personnel, who also make phone calls to other space and missile defense organizations, while keeping up with the latest intelligence reports and monitoring the health of the radar.

The United States has never been under attack by an ICBM, but false alarms do happen. "There are occasional times where an object would be returning to Earth in a ballistic trajectory, and the radar may interpret it as a ballistic trajectory, and so it will go into sight-reporting mode. It could be a decaying satellite [or] just a satellite in low-Earth orbit," Bullock said.

Although the squadron's primary mission is missile defense and missile warning, its secondary mission of providing constant space situational awareness keeps it busy most days.

"In some cases we will task the radar in a specific manner to ensure we get the object," Bullock said. "All of our space surveillance goes to the Combined Space Operations Center and helps us to build what's called an element set, which allows us to know where the object is in space and where it's going. And that's all collected in the space track catalog maintained at Vandenburg."

<https://www.defensenews.com/smr/a-modern-nato/2019/08/05/watch-the-skies-how-a-us-base-in-greenland-tracks-ballistic-missiles/>

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C4ISRNET (Vienna, Va.)

Can a Dragonfly Teach a Missile How to Hunt?

By Jen Judson

Aug. 5, 2019

WASHINGTON — A computational neuroscientist is studying whether a dragonfly's excellent hunting skills can be replicated in a missile's ability to maneuver and destroy targets midair with better precision.

Dragonflies are vicious little creatures with a hit-to-kill track record of 95 percent, meaning only 5 percent of its prey escapes.

Sandia National Laboratories' Frances Chance is building algorithms that simulate how a dragonfly processes information when intercepting prey, and she's testing them in a virtual environment. So far, the results are promising.

The laboratories are federally funded and focus on national security missions through scientific and engineering research. The project is a yearlong, high-risk, high-gain effort that will wrap up in September, and it is funded by Sandia's Autonomy for Hypersonics Mission Campaign, Chance said.

"I think what is really interesting about insects, in general, is they do something really fast and really well, but they are not particularly smart in the way you or I would think of ourselves as being smart," Chance told Defense News in a recent interview.

While insects may not be the right fit for studying cognitive capabilities to develop complex artificial intelligence, they are ideal for developing efficient computations for intercept capability. A dragonfly can react to a particular prey's maneuvers in 50 milliseconds, Chance explained. That amount of time accounts for information to cross three neurons in a dragonfly's brain. This indicates the dragonfly doesn't learn how to hunt, but rather the skill is inherent and part of its brain's hard-wiring.

"The challenge then is: Is there anything that we can learn from how dragonflies do this that we can then bring to the next generation of missiles, or maybe even the next-next generation of missiles?" Chance said.

By developing an artificial neural network that mimics a dragonfly's ability to hunt and then applying it to missile capabilities that rely on computation-heavy systems, one could reduce the size, weight and power needed for a missile's onboard computers; improve intercept techniques for targets such as hypersonic weapons; and home in on targets using simpler sensors.

If the model of a dragonfly's neural circuit developed through Chance's research shows enough promise, she would then pass the information to scientists, who would try to directly apply it to weapons systems.

One of the greatest leaps involves adapting an algorithm to handle the speed at which a missile flies. While a dragonfly is fast, it's not nearly as fast as a missile. Animal brains process information significantly slower than a computer, so it's possible computations can be sped up to better align with the speed at which a missile approaches targets.

"The hope is that even if the algorithm isn't wildly successful, you might be able to say something about what you can get away with in terms of what types of capabilities you give the next generation of weapons," Chance said.

The model she's building is several steps removed from implementation onto a weapon. "I would consider the project complete when we have a viable model — 'viable' meaning it does interception — and a bonus if it's neurobiologically plausible. There is no reason to force that for this type of research, but only because it doesn't necessarily matter; so something biologically inspired that works I would consider a success."

<https://www.c4isrnet.com/land/2019/08/05/can-a-dragonfly-teach-a-missile-how-to-hunt/>

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US ARMS CONTROL

Homeland Preparedness News (Washington, D.C.)

NTI Urges Trump, Putin to Re-engage on Nuclear Talks Following End of INF Treaty

By Dave Kovaleski

Aug. 6, 2019

The United States officially withdrew from the Intermediate-Range Nuclear Forces (INF) Treaty last week, ending a 30-year ban on a class of weapons that both the United States and the then Soviet Union, now Russia, recognized as particularly dangerous and destabilizing.

These land-based shorter- and intermediate-range nuclear-capable missiles pose a hair-trigger threat to NATO and Russia by reducing decision and warning time for leaders, Ernest Moniz and Sam Nunn, co-chairs of the Nuclear Threat Initiative, said. Now, with the dissolution of the INF Treaty, a key guardrail has come down, and the risks of nuclear blunder have gone up.

“As a result, the United States, our allies, and Russia will be less secure, and the world less safe. The costs of an accelerating nuclear arms race are unacceptably high. As the two countries with the vast majority of the world’s nuclear weapons, the United States and Russia have a responsibility to reduce nuclear risks,” Moniz and Nunn said.

They urge U.S. President Donald Trump and Russian President Vladimir Putin to intensify talks to reduce nuclear dangers. Specifically, they recommend extending the New START Treaty through 2026. Without New START, there will be no limits on nuclear forces and no verification procedures for either nation. The two leaders should also agree on core nuclear principles vital to mutual security and discuss additional measures to address new kinds of threats – such as new types of strategic nuclear systems, non-strategic nuclear weapons, space, cyber and other non-nuclear capabilities. In addition, they should also work with European allies to reduce the number of nuclear weapons deployed in and near Europe.

“The end of the INF Treaty is symptomatic of the accelerating breakdown in dialogue and agreements between the United States and Russia on issues of existential importance. Both governments must take concrete steps to reverse this dangerous decline and decisively confront the problems that threaten our mutual security. Congress and our allies must support this strategic reengagement with Russia as a necessary step to avoid crises and reduce nuclear risks that are no longer ‘unthinkable,’” Moniz and Nunn said.

<https://homelandprepnews.com/stories/35198-nti-urges-trump-putin-to-re-engage-on-nuclear-talks-following-end-of-inf-treaty/>

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Homeland Preparedness News (Washington, D.C.)

Senators Call for Extending SALT Nuclear Arms Treaty

By Dave Kovaleski

Aug. 5, 2019

A bill urging the Trump Administration to place limits on Russia's strategic nuclear arms was introduced in the U.S. Senate last week.

The legislation – sponsored by Sens. Todd Young (R-IN) and Chris Van Hollen (D-MD) — calls for extending the New Strategic Arms Reduction Treaty (New START) until 2026. This would preserve caps on Russia's nuclear capabilities, unless Russia violates the treaty. The New START Treaty — signed in 2010 — has since provided stability, predictability, and critical intelligence insights over more than ninety percent of the world's nuclear weapons, the lawmakers say. It is set to expire in 2021. It is the only remaining nuclear arms treaty between the U.S. and Russia, following the dissolution of the Intermediate-range Nuclear Forces (INF) Treaty.

“Senator Lugar championed the New START Treaty as a means for keeping Russia's nuclear weapons ambitions in check,” Young said. “This treaty is set to expire in 2021, and as renewing this treaty is debated, we must approach the decision with our eyes wide open to how the threats from nuclear weapons have evolved since the first New START. Whether repeated Russian violations or China's ambitions, it is vital for our intelligence community to conduct thorough assessments to ensure arms control efforts are effective. I'm glad to join Senator Van Hollen in this bipartisan push to continue Senator Lugar's work and curb the threat of nuclear weapons from countries like Russia for years to come.”

A companion bill was introduced in the House of Representatives by Reps. Eliot Engel (D-NY) and Michael McCaul (R-TX).

“Now more than ever we must preserve effective, verifiable limits on Russia's nuclear arsenal. The New START Treaty has succeeded in doing that over the last nine years and abandoning it would undercut national security and the security of our allies.” Van Hollen said. “I will continue to work towards curbing nuclear tensions around the world and keeping Russia's nuclear arsenal in check.”

<https://homelandprepnews.com/stories/35167-senators-call-for-extending-salt-nuclear-arms-treaty/>

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COMMENTARY

War on the Rocks (Washington, D.C.)

When Is More Actually Less? Situational Awareness and Nuclear Risks

By Rebecca Hersman and Bernadette Stadler

Aug. 2, 2019

On June 19, Iran shot down an American surveillance drone over the Strait of Hormuz, reportedly leading President Donald Trump to authorize — and later call off — strikes against targets inside Iran. In all likelihood, this would have ignited a broader military conflict, but while the situation was bad, it could have been worse. The mission that led to the Global Hawk shootdown featured familiar surveillance technologies, discernable risks (the platform's capabilities and detectability are generally known, and the U.S. Navy has operated in and around the Strait for decades), and considerable but bounded consequences for the United States: It would have likely won any ensuing conflict with Iran, and the conflict would have remained non-nuclear. However, as increasingly capable and provocative situational awareness tools come into play, these factors are not a given, and the very act of improving situational awareness may intensify escalation cycles in unanticipated ways, particularly among nuclear-armed states.

For most of the nuclear age, enhanced strategic situational awareness — the ability to characterize the operating environment, detect nuclear and conventional strategic attacks, and discern real attacks from false alarms — has been viewed as beneficial to crisis stability. By improving the accuracy and timeliness of warning, increasing visibility and clarity regarding adversary actions, and extending decision time in crisis, enhanced situational awareness reduces the risk of miscalculation at the nuclear level and alleviates use-or-lose pressures that could incentivize a nuclear first strike. Moreover, the systems that traditionally provided this strategic warning operated at long range, from outside of adversary territories, and generally in ways that were not particularly concerning to an adversary. Today, existing and emerging technology offers the prospect of insight into adversary actions and activities with unprecedented speed and precision. The combination of new sensor technologies, platforms for their deployment, high-bandwidth networks, and artificial intelligence (AI) tools is transforming the potential field of view at the conventional and strategic levels of conflict.

But can there be too much of a good thing? As the strategic situational awareness ecosystem evolves, it is becoming increasingly possible that actions taken to improve strategic situational awareness may increase the risk of escalation and upset crisis stability through three main pathways: provocation, entanglement, and information complexity. On the other hand, concerns about escalation may cause reluctance among decision-makers to use capabilities that could better illuminate a crisis and reduce the risk of war — a conclusion supported by recent exercises run as part of a CSIS study on the topic. Moreover, in today's security environment, rising regional tensions and growing nuclear capabilities of previously second- or third-tier nuclear-armed states add risk and complexity to escalatory dynamics. The lack of clear thresholds and triggers for possible conflict and the desire to press for asymmetric advantage may play out in new and unexpected ways, including through the capabilities and concepts that undergird future strategic situational awareness.

Collectively, this suggests a relook is necessary to consider not only the risks these emerging capabilities may introduce, but perhaps more importantly the challenges they may pose for policy professionals, especially when employed in a crisis or conflict between nuclear-armed states.

Finding that balance between risk and benefit in such a complex security environment while maximizing the value of information to terminate a crisis or conflict on favorable terms won't just happen. To effectively manage crisis escalation, decision-makers must understand the dynamic relationship between improved strategic situational awareness and crisis stability and then plan, train, and exercise accordingly.

The Traditional Strategic Situational Awareness Environment (1950 to 1990)

The traditional strategic situational awareness environment emerged during the Cold War and focused on understanding a near-peer adversary's nuclear forces. It consisted primarily of passive systems (e.g., radars, satellites, and hydrophones) that were viewed as stabilizing because they were designed to detect attacks, not to predict them. Furthermore, these technologies were focused almost exclusively on collecting information on nuclear systems. The bright line between systems used for nuclear and conventional situational awareness reduced the possibility of inadvertent escalation through entanglement, a phenomenon identified and expounded upon by James Acton. It also meant that strategic situational awareness assets were secure and compartmentalized and difficult to target kinetically.

As a result, the traditional situational awareness environment generally yielded high confidence in the information these systems provided, limited their vulnerability to adversary attack or manipulation, and reduced the chances of miscalculation. These systems were viewed as contributing positively to strategic stability by ensuring confidence in the durability of the overall nuclear deterrent and reducing risks of premature or miscalculated nuclear use.

The Transitional Strategic Situational Awareness Environment (1990 to 2020)

In the past two decades, the security and strategic situational awareness environments have been altered by three key trends: the rapid pace of technological innovation, the increasing likelihood of conflict between nuclear-armed states (both between dyads with roughly symmetric nuclear arsenals and those with wildly asymmetric arsenals), and the increasingly dual-use nature of military and surveillance technology. Critically, the traditional strategic situational awareness environment contained systems that were either focused on nuclear warning or on providing intelligence to commanders about the conventional battlefield. By contrast, in the transitional strategic situational awareness environment, dual-use strategic situational awareness capabilities may be tasked to conduct both missions. In this new environment, past assumptions about the compartmentalization of nuclear and conventional situational awareness systems and the stabilizing nature of transparency at the nuclear level may no longer apply.

The origin of the transitional strategic situational awareness environment can be traced back to the 1990s. Technological developments throughout the second half of the 20th century culminated in the networked battlefield of the Gulf War, in which the employment of effective communications, command, control, and intelligence (C3I) dramatically improved situational awareness by making use of strategic systems for conventional purposes, especially in terms of precision targeting.

Since that time, this dynamic has intensified. Advanced, long-range, and often dual-use missile systems have proliferated dramatically and now must figure significantly into planning and execution of conventional conflicts. This means that adversaries may have strong incentives to target nuclear warning systems early in a crisis to ensure conventional dominance. However, if both combatants were nuclear-armed, this type of action could lead to "misinterpreted warning" — the victim's belief that attacks against its dual-use C3I assets were actually precursors for a nuclear strike — and potentially nuclear escalation.

At the same time, as Keir Lieber and Daryl Press discuss at length, conventional capabilities are becoming more useful for nuclear tracking or targeting missions. As strategic situational awareness

capabilities improve, their counterforce value will grow as well. But perhaps more problematically, the actual or perceived ability of technologically advanced countries to carry out precision strike missions against strategic nuclear assets will make any situational awareness-enhancing activities — even those purely defensive in nature — seem highly provocative or escalatory. For example, if North Korea knew or suspected that the United States had the capability to track and destroy its nuclear-capable mobile missiles, it might be compelled to assume that any U.S. intelligence, surveillance, and reconnaissance assets in its airspace were a threat to its nuclear assets regardless of their actual assigned mission.

The Emerging Strategic Situational Awareness Environment (2020 forward)

The emerging strategic situational awareness environment will be even more networked, dual-use, and codependent than the transitional one. Distinctions or firebreaks between conventional and strategic situational awareness will all but disappear, creating a highly networked, real-time, dual-use landscape that is both murkier and more complex across all levels of conflict.

In the emerging situational awareness environment, not only will conventional weapons rely on strategic situational awareness assets for targeting data, countries will also rely on conventional situational awareness systems for strategic warning. For example, hypersonic systems, boost-glide systems, long-range cruise missiles, and other capabilities are designed to elude traditional U.S. early warning systems (i.e., radars and satellites) and thus defeat U.S. missile defenses. To counter these new delivery systems, the United States may have to rely on conventional situational awareness systems, including systems that are more visible or intrusive, to complete strategic missions and supplement strategic situational awareness. If an adversary were to discover and target such systems, would such an attack be considered conventional or strategic in intent and implication? Increasingly blurred lines between nuclear and conventional command, control, and communications also contribute to this dynamic. Conventional missile warning currently relies on these dual-use surveillance capabilities, increasing the risk that they could be targeted in a conventional conflict for conventional purposes but with profound strategic implications.

In the emerging strategic situational awareness ecosystem, there will be ample potential for inadvertent escalation through miscalculation. For example, deploying unmanned underwater vehicles to monitor an adversary's nuclear submarines might trigger adversary concerns about potential vulnerabilities to its nuclear forces, and thereby generate an escalatory response.

Technology and Escalation Risks

The capabilities in the emerging strategic situational awareness environment have the potential to dramatically improve decision-makers' understanding of developing conflicts and crises especially in light of rapidly evolving delivery systems that may elude traditional strategic warning and situational awareness. However, it is possible that the use of these capabilities may likewise complicate crisis management and introduce new escalatory risks. Of particular concern are three potential escalation pathways — provocation, entanglement, and information complexity — that may be triggered or exacerbated by the use of emerging strategic situational awareness-enhancing capabilities.

Provocation

The active nature of the emerging strategic situational awareness ecosystem means that states have the capability to penetrate adversary territory (land, sea, and air) and networks to gain highly precise and potentially actionable information. However, these capabilities are potentially provocative — they directly challenge legal and political concepts of sovereignty, their mission (general surveillance vs. counterforce support or surveillance vs. strike) may not always be readily identifiable, and they may intentionally or unintentionally approach vital strategic assets as they

conduct surveillance. Similarly, cyber surveillance of strategic situational awareness or NC3 systems may provide highly valuable insight into adversary actions and decision-making with low risks of detection. But if discovered, such intrusions could be difficult to distinguish from a destructive or offensive attack, and therefore could be highly provocative.

Policymakers may already be cognizant of this potential escalatory pathway; ironically, the greater risk may be that policymakers overcompensate and opt not to use capabilities that could produce important information because they perceive them to be too risky. In a series of table-top exercises carried out by CSIS, mid-career and senior academics and policymakers proved very hesitant to deploy capabilities that would enter adversary airspace or territorial waters. They viewed capabilities that operated outside of adversary territory as less likely to cross adversary thresholds and trigger escalation. Excessive caution may avoid unnecessary provocation but may also force decision-makers and military operators to “fly blind” in a crisis in ways that contribute to miscalculation.

However, the question remains as to how well American policymakers understand adversary thresholds and red lines. For example, would China consider American situational awareness capabilities operating in newly claimed and still contested Chinese territory less provocative than assets operating in Chinese territory as recognized by international law? Given the novelty of these technologies and use scenarios, it is highly probable that China — or any other U.S. adversary — probably has not thought through in detail their own red lines, further complicating the action-reaction cycle in a crisis.

Entanglement

The blended or dual-use nature of the emerging situational awareness ecosystem contributes to the potential for escalation through entanglement. As defined by James Acton, entanglement occurs when nuclear delivery systems, forces, and support structures are co-mingled, or when non-nuclear weapons are able to threaten nuclear weapons and their C3I. Entanglement in the strategic situational awareness space occurs when conventional situational awareness systems intentionally or unintentionally collect information on nuclear assets, or when dual-use situational awareness systems become military targets during a conventional conflict. Entanglement can lead to escalation by convincing one or more countries in a crisis that their nuclear assets are at risk.

While the escalatory risks of entanglement are somewhat clear, the solutions — especially with regard to strategic situational awareness capabilities — are far less so. A return to a more disaggregated, or stove-piped system of surveillance and warning for nuclear versus conventional purposes simply may not be realistic. More likely, these risks will need to be moderated via communications, transparency, signaling, and perhaps favoring more overt sources of collection over covert or stealthy means.

Our exercises suggest that policymakers are quite attuned to the risk of entanglement, especially where command and control is concerned. Even so, participants struggled to articulate effective ways to differentiate between intrusive cyber surveillance of nuclear and conventional command and control and tended to significantly restrict the use of cyber capabilities against adversary command and control if they did not reject it entirely. Participants were less concerned about entanglement when surveilling adversary capabilities — either nuclear or conventional — in other domains. For example, in many cases policymakers were willing to use unmanned underwater vehicles to detect adversary submarines as long as surveillance occurred outside of the adversary’s territorial waters, while recognizing that there could be a discrimination issue between the adversary’s nuclear and conventional assets, and that the adversary may not be able to discern whether the unmanned underwater vehicle was armed or unarmed.

Information Complexity

Both the quantity and quality of information generated by the emerging strategic situational awareness ecosystem have the potential to cause escalation in surprising ways. In the national security field, it is widely assumed that more and better information leads to better decision-making. However, this may not always be the case. The technologies in the emerging strategic situational awareness ecosystem have the potential to provide vast amounts of information; however, this information must be analyzed and distilled in a way that is useful. For example, while it may be possible for AI to assist human analysts with this task, the fact remains that the right questions must be asked in order to render information beneficial.

Furthermore, the ambiguous and unproven nature of some of the new streams of strategic situational awareness may lead decision-makers to discount vital information if they don't trust the source. The hesitancy to trust new technology described in Molly Kovite's recent article has also played out in our table-top exercises across a range of technologies including pseudo-satellites, small satellites, and next-gen stealth, as well as AI.

Policymakers also expressed reluctance to accept information generated by unfamiliar technology or assumed more risk than reward in its use. Sometimes, policymakers discounted the value or reliability of some technologies — such as stealth — altogether. On the other hand, policymakers assigned signaling value to nearly every action, including the use or deployment of surveillance assets, in ways that were often not anticipated by technology experts, who viewed most of these capabilities not as political tools but rather technical ones. This suggests that psychology is underappreciated when examining the relationship between decision-making and emerging technology, and that new technologies should be socialized with policymakers well before the onset of a crisis to improve the likelihood that policymakers will trust and use them.

The Next Crisis?

Emerging technologies that improve situational awareness can provide tremendous visibility into a future crisis or conflict but likely not without significant potential risk when employed between nuclear-armed adversaries. It is possible that policymakers will not appreciate the potential escalatory pathways described above and use strategic situational awareness-improving capabilities in ways that cause crisis instability and escalation. It is also possible that policymakers will recognize escalation risks and overcompensate, neglecting to use capabilities that could otherwise improve their ability to manage a crisis. As a good first step, appropriate socialization to new capabilities and appreciation of the trade-offs associated with their use can help policymakers maximize benefits and reduce risks. The key is ensuring that policymakers encounter these trade-offs and develop a more sophisticated understanding of these capabilities before a crisis hits — not afterwards.

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<https://warontherocks.com/2019/08/when-is-more-actually-less-situational-awareness-and-nuclear-risks/?fbclid=IwAR2-RfacMZ0D4QzhDaSA3sMkHJkyIT7LB-ihTIWteFnOEa pMaU-S5o8xvo>

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Defense One (Washington, D.C.)

Five Questions about Nukes to Ask at the Next Debate

By Matt Korda

July 31, 2019

On Tuesday night, nuclear weapons took center stage at one of the televised debates between Democratic presidential hopefuls — if only for three minutes.

Sen. Elizabeth Warren and Gov. Steve Bullock squared off, briefly, over a moderator's query about whether the United States should introduce a policy to never use nuclear weapons first. Senator Warren has made this a cornerstone of her national-security platform; in January, she introduced a "no-first-use" bill in conjunction with House Armed Services Chairman Adam Smith.

Warren crushed the question, responding that such a policy "makes the world safer" by reducing the chance of catastrophic miscalculation in a crisis. Not unrelatedly, she noted that President Trump is adding new types of nuclear weapons to the U.S. arsenal and expanding their role in U.S. military doctrine.

Governor Bullock responded with hawkish--mostly Republican--talking points, saying that he wouldn't want to take a pre-emptive nuclear strike off the table. He also disingenuously suggested that a no-first-use policy would allow North Korea to nuke Detroit without any repercussions, a truly mind-boggling statement.

Certainly, questions about nuclear issues are welcome at these debates, yet those hoping for a substantial and necessary discussion about U.S. nuclear policy were largely disappointed. Even the question itself, posed by CNN's Jake Tapper, was framed poorly, using the hawkish talking point that having a no-first-use policy might "tie the US' hands."

The greatest immediate existential threat to humanity deserves more thoughtful questions and answers--and certainly more than three minutes of debate. Here are five nuclear-policy questions that future debate moderators ought to ask every candidate:

What is your plan to stop the global arms race? Nuclear tensions are the highest they've been since the Cold War, in no small part thanks to Trump's dangerous rhetoric and his promise to build new nuclear weapons. His administration is also killing arms control treaties left and right, and will officially withdraw from the landmark INF Treaty this Friday. A new administration must diplomatically re-engage with both adversaries and allies in an attempt to defuse the arms race. Candidates may differ on their immediate priorities, but reducing nuclear tensions through diplomacy is a must.

How much should we be spending on nuclear weapons? The Obama administration vowed to replace every weapon in the U.S. nuclear arsenal, and now the Trump administration is promising to build even more nukes. If all of these plans come to fruition, the United States will spend nearly \$100,000 per minute on its nuclear forces over the next decade. This is obviously unacceptable. Unfortunately, cancelling Trump's new nukes is just a drop in the bucket; candidates need a vision for re-shaping the U.S. nuclear stockpile that dramatically cuts costs and takes ambitious steps towards a world without nuclear weapons.

How are you going to confront the nuclear-industrial complex? Surprise, surprise: nuclear policy decisions are largely driven by money and influence--not by security concerns. The "revolving door" between Congress, think tanks, war contractors, and lobbyists has been well-documented,

and must be slammed shut. As is her wont, Warren has a plan to do exactly that. Other candidates should follow in her footsteps.

Should one person have the authority to launch nuclear weapons? Under current policy, a single individual--the President--has the sole authority to launch nuclear weapons. Even without an erratic Donald Trump in the Oval Office, this is incredibly dangerous. It's also wholly unnecessary in a post-Cold War era: the policy was designed to immediately retaliate to a Soviet surprise attack, but today, a Russian "bolt-from-the-blue" nuclear strike has become totally implausible. Analysts have offered a variety of options to reform nuclear launch authority; candidates should pick one and run with it.

How will you provide justice to victims of U.S. nuclear testing, bombings, and radiation? Nuclear weapons have done irreparable harm to vulnerable communities and environments, on both foreign and domestic soil. The United States has a moral imperative to mitigate decades of nuclear oppression by providing economic reparations, environmental remediation, and humanitarian assistance to frontline communities affected by U.S. nuclear policies. People are still suffering from nuclear tests that took place fifty years ago, and candidates need to be pushed on how they plan to fix this.

These questions need to be asked, and indeed voters want them to be asked. Over 80 percent of respondents to recent polls in Iowa and New Hampshire--where the first two Democratic primaries will be held--said they wanted to hear candidates' views on nuclear weapons. So when the candidates gather in Texas on Sept. 12 and 13, moderators should ensure that nuclear matters get quite a bit longer than three minutes. Perhaps they will even let every candidate weigh in.

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<https://www.defenseone.com/ideas/2019/07/five-questions-about-nuclear-weapons-should-have-been-asked-debate/158849/?oref=d-river>

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ABOUT THE USAF CSDS

The USAF Counterproliferation Center (CPC) was established in 1998 at the direction of the Chief of Staff of the Air Force. Located at Maxwell AFB, this Center capitalizes on the resident expertise of Air University — while extending its reach far beyond — and influences a wide audience of leaders and policy makers. A memorandum of agreement between the Air Staff's Director for Nuclear and Counterproliferation (then AF/XON) and Air War College commandant established the initial personnel and responsibilities of the Center. This included integrating counterproliferation awareness into the curriculum and ongoing research at the Air University; establishing an information repository to promote research on counterproliferation and nonproliferation issues; and directing research on the various topics associated with counterproliferation and nonproliferation.

In 2008, the Secretary of Defense's Task Force on Nuclear Weapons Management recommended "Air Force personnel connected to the nuclear mission be required to take a professional military education (PME) course on national, defense, and Air Force concepts for deterrence and defense." This led to the addition of three teaching positions to the CPC in 2011 to enhance nuclear PME efforts. At the same time, the Air Force Nuclear Weapons Center, in coordination with the AF/A10 and Air Force Global Strike Command, established a series of courses at Kirtland AFB to provide professional continuing education (PCE) through the careers of those Air Force personnel working in or supporting the nuclear enterprise. This mission was transferred to the CPC in 2012, broadening its mandate to providing education and research on not just countering WMD but also nuclear operations issues. In April 2016, the nuclear PCE courses were transferred from the Air War College to the U.S. Air Force Institute for Technology.

In February 2014, the Center's name was changed to the Center for Unconventional Weapons Studies (CUWS) to reflect its broad coverage of unconventional weapons issues, both offensive and defensive, across the six joint operating concepts (deterrence operations, cooperative security, major combat operations, irregular warfare, stability operations, and homeland security). The term "unconventional weapons," currently defined as nuclear, biological, and chemical weapons, also includes the improvised use of chemical, biological, and radiological hazards. In May 2018, the name changed again to the Center for Strategic Deterrence Studies (CSDS) in recognition of senior Air Force interest in focusing on this vital national security topic.

The Center's military insignia displays the symbols of nuclear, biological, and chemical hazards. The arrows above the hazards represent the four aspects of counterproliferation — counterforce, active defense, passive defense, and consequence management. The Latin inscription "Armis Bella Venenis Geri" stands for "weapons of war involving poisons."

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