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Feature Report

“MISSILE DEFENSE: Delivery Delays Provide Opportunity for Increased Testing to Better Understand Capability”. Published by U.S. Government Accountability Office; June 6, 2019

<https://www.gao.gov/products/GAO-19-387>

The Missile Defense Agency has made progress on a system that detects and intercepts missiles. However, it didn't meet its delivery and testing goals.

Several years of construction delays at a site in Poland required the agency to push the system's delivery date to 2020. At this site, the system could protect parts of Europe from missiles launched in the Middle East. Testing has also been reduced or deferred—leaving its end users with less information about how the system will eventually work.

We recommended the Missile Defense Agency use the delay to test the system and ensure it can protect U.S. allies against ballistic missile threats.

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NUCLEAR WEAPONS

Albuquerque Journal (Albuquerque, N.M.)

Feds Will Do ‘Supplement’ Environmental Review for Pits at LANL

By Mark Oswald

June 10, 2019

SANTA FE – A federal agency announced Monday that it will prepare a full-blown environmental impact statement on production of plutonium “pits” at a South Carolina site but will perform only a lesser review, for now, of ramping up pit-making to 30 units a year at Los Alamos National Laboratory.

The National Nuclear Security Administration will conduct a “supplement analysis” at LANL, following on a 2008 environmental impact statement there, and provide “site-specific documentation” for proposed authorization of expanded production of pits — the cores of nuclear weapons — at the Los Alamos lab.

Depending on the results, NNSA may announce an amended “record of decision” for the prior environmental impact statement at LANL or could prepare more National Environmental Policy Act documentation for pit-making there.

NNSA said in Monday’s statement that LANL, based on prior reviews, is at this point authorized to make no more than 20 pits annually.

NNSA, which oversees the nation’s nuclear weapons labs, is under a mandate from Congress and the military to make 80 plutonium pits a year by 2030 as part of plans to modernize the nations’ nuclear weapons arsenal.

The U.S. made many pits during the Cold War but only a handful have been produced in recent decades, all at Los Alamos. Critics point to studies that say thousands of old pits in use or storage now can last for many decades.

A plan costing up to \$28 billion for start-up adopted by NNSA calls for 50 pits a year to be made at South Carolina’s Savannah River Site, by repurposing a facility there, and at least 30 a year at LANL. No pits have been made since LANL completed a set of 29 in 2011, and the most ever made in a year at Los Alamos was 11.

Activists have been pushing for more environmental study before LANL, with a history safety issues, resumes making pits. NNSA Monday announcement said it will conduct a supplement analysis for pit-making across the entire national weapons complex as well a similar review at Los Alamos and the full environmental impact statement at Savannah River.

Greg Mello of the Albuquerque-based Los Alamos Study Group said he’s glad NNSA noted the 20-pits-a-year existing limit at LANL but said the promised supplement analysis amounts to no more than “a ‘memo to file’ as to whether New Mexico deserves a fresh look at the effects of expanded pit production,” without any promise of taking public comment. He said the 2008 EIS at Los Alamos was based on now-outdated assumptions, like plans for a big new building for plutonium work that were cancelled.

A statement released by Nuclear Watch New Mexico and two other public interest groups said it was a significant victory that NNSA agreed to an EIS for Savannah River and that safety issues at Los Alamos must be resolved.

A recent independent study commissioned by Congress cast serious doubt on any NNSA plan to get to 80 pits a year over the next decade, saying the agency may not even be able to begin operations by 2030, much less achieve full-rate production.

<https://www.abqjournal.com/1326656/feds-will-do-supplement-environmental-review-for-pits-at-lanl.html>

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UPI (Washington, D.C.)

Analysts: Uranium Enrichment Ongoing at North Korean Nuclear Facility

By Thomas Maresca

June 7, 2019

SEOUL, June 7 (UPI) -- Operations are continuing at a North Korean uranium enrichment site, said analysts for website 38 North, a project of Washington, D.C.-based think tank The Stimson Center.

According to an examination of recent commercial satellite imagery of North Korea's Yongbyon Nuclear Scientific Research Center, "operations at the Uranium Enrichment Plant (UEP) remain ongoing," the report published Wednesday stated.

The report noted that activity at the site includes vehicles, equipment and personnel arriving and departing, including a tanker trailer leaving a large cylinder or shipping container near the facility's gas centrifuge hall.

The images appear consistent with a liquid nitrogen tanker trailer, the analysts wrote, which is a necessary component in the uranium enrichment process.

"Our observation, that periodic material transport (e.g., possibly to deliver liquid nitrogen) has continued at the Uranium Enrichment Complex over time, provides a new indicator that the complex is operational, and therefore that it is also most likely producing enriched uranium," the report states.

The analysis, based on imagery from the months leading up to May 28, could not determine the actual levels of enrichment or the total production throughput of the facility's roughly 4,000 centrifuges.

North Korea has built nuclear weapons using both plutonium and uranium as fissile materials.

The report comes as negotiations between Washington and Pyongyang over the North's nuclear program remain at a stalemate.

North Korea has been looking for relief of some international sanctions during a gradual process of winding down its nuclear program, but the United States has continued to hold out for complete denuclearization first.

At a second U.S.-North Korea summit held in Hanoi, Vietnam, in February, North Korean leader Kim Jong Un offered to dismantle the Yongbyon complex in exchange for the easing of sanctions, but the summit ended abruptly without any deal.

Earlier this week, North Korea indicated that its patience was wearing thin over the stalled negotiations.

"The U.S. would be well-advised to change its current method of calculation," an unnamed spokesman for North Korea's ministry of foreign affairs said in a statement carried by state-run Korean Central News Agency.

"There is a limit to our patience," he added.

Tensions between North Korea and the United States have risen since the February summit, as North Korea launched what the Pentagon said were short-range ballistic missiles on May 4 and May 9, the first such launches since late 2017.

Last month, Washington announced that it had seized a North Korean cargo ship on suspicion that it violated sanctions. Earlier this week, the U.S. Seventh Fleet deployed a Coast Guard ship in the Yellow Sea in waters near North Korea, a move seen by some as an effort to step up monitoring and enforcement of sanctions.

However, President Donald Trump on Wednesday maintained an optimistic take on the U.S.-North Korea relationship.

"It's been going pretty well because there hasn't been testing of anything major, and, frankly, there's been no nuclear testing in a long period of time," he told reporters during his visit to Ireland.

"I think that Chairman Kim would like to make a deal, and I'd like to make a deal with him. I look forward to seeing him in the appropriate time," the president added.

https://www.upi.com/Top_News/World-News/2019/06/07/Analysts-Uranium-enrichment-ongoing-at-North-Korean-nuclear-facility/2991559876760/

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Minot Daily News (Minot, N.D.)

Planning for Next-Gen ICBM

By Eloise Ogden

June 5, 2019

Representatives of Northrop Grumman Corporation, one of two companies vying for a multi-billion dollar contract to provide the nation's next intercontinental ballistic missile (ICBM) system, were in Minot on Monday to continue their efforts to reach out to the Minot community.

About 20 Northrop Grumman representatives held an Industry Day at the Grand Hotel with an open informational meeting and one-on-one meetings with a number of potential suppliers.

Retired Air Force Brig. Gen. Russ Anarde, Northrop Grumman corporate lead executive, said the purpose of the visit is partnership.

"We're at a point now where we have to prepare to be ready on day one of this contract," he said.

Northrop Grumman is competing with the Boeing Company for the GBSD contract. The U.S. Air Force plans to award the contract during the third quarter of 2020.

Anarde said Northrop Grumman is visiting Minot and the other ICBM communities to "turn up the volume" in lines of communication with these communities. He said they want to make sure to "factor in impacts to community, and concerns, and that continues today."

GBSD is an entirely new system – not just the missile – but they will use the existing silos, according to Carol Erikson, vice president of the GBSD program at Northrop Grumman. Most recently, Erikson visited Minot in 2017 and again last year.

“GBSD is the next-generation ICBM system. It’s an all new command-and-control, communications, all new missile,” she said.

The current timeline is for the initial deployment of the GBSD in the late 2020s and the final system capability in the late 2030s, Erikson said.

Anarde, of Colorado Springs, Colo., is familiar with the Minot missile complex, Minot Air Force Base and the Minot community. During his Air Force career he was commander of the 91st Space Wing (now 91st Missile Wing) at Minot Air Force Base from August 1996-April 1998. He also was commander of the 741st Strategic Missile Squadron from June 1986-July 1988.

Minot AFB, F.E. Warren AFB, Wyo., and Malmstrom AFB, Mont., are the only three bases with the Air Force’s operational ICBM units. Minot AFB is headquarters for the 91st Missile Wing.

“Partnership is really the purpose of why we’re here and we’ve opened up that spectrum of partnership now to include outreach to businesses because we know their participation is going to be critical to delivering this capability,” Anarde said.

He said the types of businesses range from construction trades, logistics, and transportation to support services.

“They are ones that concern themselves with infrastructure, deployment and support services,” he said.

He said they are qualifying small businesses to be ready to provide products or services but they can’t do more beyond qualifying at this point until the contract is awarded.

“We can only do preliminary screening but it’s important for us to be ready to deliver on day one,” he said.

During the open informational session held on Monday in Minot, Anarde said they talked about the nuclear triad from the standpoint of leaders, including Gen. John Hyten, and the importance of the land-based leg of the triad.

Besides the land-based ICBMs, the other two legs of the triad are bombers and ballistic missile submarines.

Hyten, commander of U.S. Strategic Command, recently was nominated to become the vice chairman of the Joint Chiefs of Staff.

Anarde said he told the group “that the triad remains a viable concept.” He said the triad was reaffirmed in the Nuclear Posture Review.

The Northrop Grumman team also met with leadership of the Minot Area Chamber of Commerce and Task Force 21, Minot’s base retention and new mission committee.

“The spirit of partnership demands that you stay in touch, you stay in communication, so that’s why we’ve been on an annual cycle, and we have taken the inputs that we’ve received from leaders here and carried those back and incorporated them into our own planning,” he said.

“Again that word is partnership – we’re serious about that. We have been a trusted partner, we believe a proven partner with the Air Force over time,” Anarde said.

It will be a few more months before the contract for the new ICBM system is awarded.

“We’ll come back as needed,” Anarde said of future visits to Minot and other ICBM communities.

<https://www.minotdailynews.com/news/local-news/2019/06/planning-for-next-gen-icbm/>

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US COUNTER-WMD

Homeland Preparedness News (Washington, D.C.)

Stakeholders Commend Approval by Congress of Pandemic Preparedness, Response Bill

By Kim Riley

June 5, 2019

The Blue Ribbon Study Panel on Biodefense, the Alliance for Biosecurity, and the Trust for America’s Health on Wednesday applauded the overdue reauthorization of the nation’s all-hazards preparedness and response law addressing public health threats, whether naturally occurring or man-made.

The U.S. House of Representatives on Tuesday afternoon voted to approve the Pandemic and All-Hazards Preparedness and Advancing (PAHPA) Innovation Act of 2019, S. 1379, and now that both chambers of Congress have passed the bill, it heads to the president’s desk to be signed into law.

The current law expired on Sept. 30, 2018.

“Naturally occurring diseases and biological weapons continue to endanger our nation,” said former Pennsylvania Gov. Tom Ridge, co-chairman of the Blue Ribbon Study Panel on Biodefense. “The panel is pleased to see that Congress addressed 15 of our recommendations in this legislation, which will help the nation better prepare for, detect, respond to, and recover from large-scale biological events, bioterrorism or other biological events.”

S. 1379, sponsored by U.S. Sen. Richard Burr (R-NC) on May 8, aims to bolster the nation’s health security strategy, strengthen the country’s emergency response workforce, prioritize a threat-based approach, and increase research and development of medical countermeasures (MCMs), among numerous provisions contained in the comprehensive bill.

Many of the provisions contained in S. 1379, in fact, harken to the Blue Ribbon Study Panel’s 2015 report, *A National Blueprint for Biodefense: Leadership and Major Reform Needed to Optimize Efforts*, which recommended changes to U.S. policy and law to improve national biodefense and maximize resource investments.

“The passage of this broad legislation builds on important progress Congress has been making in addressing concerns detailed in our initial blueprint,” said former U.S. Sen. Joseph Lieberman, the panel’s co-chairman with Ridge. “Along with the inclusion of three panel recommendations in last year’s Farm Bill, Congress is demonstrating just how seriously it takes the biological threat and the recommendations that could help the public if a large-scale outbreak occurs.”

For example, S. 1379 directs the U.S. Department of Health and Human Services to establish guidelines and a corresponding pilot project for regional systems of hospitals and health care facilities, which corresponds with the panel’s Recommendation 21 in its 2015 blueprint.

Other panel blueprint recommendations that made it into the approved S. 1379 include the development of a national strategy to address cyber threats to public health security

(Recommendation 24); streamlining the use of flexible contracting authorities by the Biomedical Advanced Research and Development Authority, or BARDA, (Recommendation 29); and coordination between the U.S. Department of Defense and Department of Homeland Security to report on biological detection technology and information sharing (Recommendation 31), among others.

Passage of the legislation also was a top recommendation in the recent report, *Ready or Not: Protecting the Public's Health from Diseases, Disasters, and Bioterrorism*, published by the Trust for America's Health (TFAH).

"The Pandemic and All-Hazards Preparedness and Advancing Innovation Act shows that we are learning the lessons from recent disasters and disease outbreaks and addressing ongoing challenges," said John Auerbach, president and chief executive officer of TFAH.

For instance, it took about nine months during the Zika outbreak for the federal government to approve emergency supplemental funding, Auerbach said, adding that recent severe weather also showed that the United States still isn't prepared for a "worst-case scenario event."

"In this legislation, lawmakers try to address some of the gaps that these events exposed," he said on Wednesday. "The bill makes it easier to get money out more efficiently to address a public health emergency."

S. 1379 also codifies the roles of federal agencies in managing preparedness programs and seeks to ensure that grant awardees consistently improve their performance, said Auerbach.

Additionally, the legislation supports outbreak detection through workforce and strategy enhancements; reauthorizes programs for research, development and stockpiling of MCMs, and will help speed the capability to deploy such products, he added.

"The fact that Congress passed this bill is acknowledgement that health security is national security," Auerbach said. "Now, we call on Congress to give this legislation the teeth it needs by providing adequate funding for these critical public health programs."

Chris Frech and Brent MacGregor, co-chairmen of the Alliance for Biosecurity, also heralded federal lawmakers' commitment to strengthening the nation's preparedness and response capabilities.

"PAHPA enables long-term public-private partnerships, which are essential in safeguarding public health and building resilience against chemical and biological threats and emerging infectious diseases," said Frech, who is also senior vice president of global government affairs for Emergent BioSolutions. "We, as an industry, look forward to continuing to support the government's national security strategy."

Emergent BioSolutions, a global biopharmaceutical company that develops, manufactures and delivers a portfolio of MCMs for biological and chemical threats, as well as emerging infectious diseases, has been in several long-term and ongoing contracts with the government.

The same is true for Seqirus, where MacGregor is senior vice president of commercial operations. The global influenza vaccine company has manufacturing and R&D hubs across three continents, an internationally integrated supply chain, and a commercial presence in more than 20 countries.

MacGregor said passage of S. 1379 "marks a critical milestone" for such public-private partnerships to protect Americans against a new influenza pandemic threat.

For instance, section 404 of the legislation addresses preparations for pandemic influenza, antimicrobial resistance, and other significant threats, according to the text of the bill, and through BARDA, a variety of strategic initiatives may be implemented, including for "threats that

consistently exist or continually circulate and have a significant potential to become a pandemic,” like the flu.

Countering such threats may entail development of processes to support the advanced R&D of countermeasures that include vaccines, multi-use platform technologies for diagnostics, therapeutics, virus seeds, and clinical trials, among others, according to the bill.

“We are proud to stand on the front line with our partners to provide rapid access to life-saving influenza pandemic vaccines,” said MacGregor.

<https://homelandprepnews.com/stories/34236-stakeholders-commend-approval-by-congress-of-pandemic-preparedness-response-bill/>

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National Defense (Arlington, Va.)

Army Charts New Path for Air and Missile Defense

By Connie Lee

June 10, 2019

To counter new and evolving weapons on the battlefield, the Army has created a new roadmap aimed at beefing up its air-and-missile defense force.

The document — released in March — outlines the service’s vision for its systems and soldiers from now through 2028 to help prepare it for multi-domain operations. The last time the Army released such a blueprint was about four years ago, Lt. Gen. James H. Dickinson, commanding general of Army Space and Missile Defense Command/Army Forces Strategic Command, told reporters.

“The operational environment has definitely changed and become more complex,” he said. Additionally, there is “more of a great power competition,” he noted at the Association of the United States Army’s Global Force Symposium in Huntsville, Alabama.

In support of the 2018 national defense strategy, the Army must have air-and-missile defense forces that can counter advanced adversaries such as Russia and China, the roadmap said.

The operational tempo for these forces “will remain high, supporting current commitments while simultaneously developing capability to support multi-domain operations,” it noted.

The changing battlefield is pitting the service against advanced weapons such as unmanned aerial systems and sophisticated ballistic missiles, Dickinson said. Additionally, hypersonic vehicles are “looming,” he noted.

This means the Army will need to use a mix of coordinated capabilities to counter these threats, Dickinson said.

“How do you do that? You synergize it within the document so that you’re addressing each one of those not only from a materiel standpoint, but from a training standpoint as well,” he said.

Tom Karako, director of the missile defense project at the Center for Strategic and International Studies, said in an interview that combining these capabilities has been a “long time coming.”

“We need to move away from having these capabilities in stovepipes — and segregated — to having robust and layered defenses against the full spectrum of threats,” he said.

Russia is already using a variety of air-and-missile capabilities to fight in Ukraine, he said. It is “mixing and matching” unmanned aerial systems, cruise missiles and artillery, he noted, and the United States will need to adapt.

“There’s no time to be beating around the bush,” Karako said. “If we’re going to adapt to great power competition, then we’re going to have to pivot our active air-and-missile defenses away from just rogue states to the real threat.”

Dickinson said the Army wants to create air-and-missile defense battalions that each have a variety of platforms at their disposal. These formations will have “tailored force packages” to counter specific threats, he noted. For instance, one unit may have Patriot missile systems and a terminal high-altitude area defense system, whereas another may pair Patriot with an indirect fire protection capability.

“We’ve got to have capabilities that are mixed together in order to provide us a capability that can counter everything ... from a UAS up to a ballistic missile,” he said. “Tiered, layered missile defense is one of the main messages within this document.”

The composition of these units will be based on specific situations, he said, because “the threat may not be the same across the entire battlefield.” The future force will need to be “agile, rapidly tailorable, scalable, and able to fight multiple, complex, integrated attacks,” the document stated.

The roadmap is divided into four lines of effort. These include developing air-and-missile defense technologies; building capability for multi-domain operations; providing trained and ready forces; and maintaining forward presence and building allied and partner capacity.

Intercontinental ballistic missiles are the most dangerous aerial threat, the document stated. The most common threats include intermediate-range and theater-class ballistic missiles, cruise missiles, unmanned aerial systems, rolling airframe missiles, and fixed-wing and rotary-wing aircraft. Airborne threats are even more harmful when enemies use them in integrated attack and from different directions, it said.

The Army’s current forces have assets to counter ballistic missiles, but it needs to improve its ability to fight maneuvering forces at close range, the document noted. Avenger short-range air defense units currently do not have the survivability, mobility, range and lethality they need, the document noted.

To get at this problem, the Army plans to bring in the indirect fire protection capability, or IFPC. With a kinetic missile interceptor and a networked sensor, IFPC will be a transportable system that can counter cruise missiles, unmanned aerial systems up to 55 pounds and rolling airframe missiles. Initial operational capability is slated for fiscal year 2023, according to the roadmap.

The need for more short-range air defense capabilities has been one of the service’s top challenges for years. In the 2015 report “National Commission on the Future of the Army,” servicemembers and experts pointed out that the active component did not have short-range air defense battalions and that those within the National Guard were occupied in the national capital region. This left the service unable to provide protection in high-threat areas such as Northeast Asia and Eastern Europe, the report said.

“Short-range air defense represents another example of an important shortfall,” it said. “In the post-Cold War era, the Army envisioned little threat from the air forces of potential adversaries. Recent activities in Ukraine and Syria have demonstrated the threat environment has changed.”

The Army’s new air-and-missile defense roadmap also highlights the service’s push to build capacity with partner nations. Dickinson said this is key to the Army’s global air-and-missile defense architectures, capabilities, planning and designs across the world.

The Army is running an exercise called “Nimble Titan” to explore different air-and-missile defense capabilities from around the globe, he said. About 26 countries are participating in the event.

“Our ability to continue to work with our partners and allies in terms of bringing them into our collective defense building capacity — as well as capability — is fundamental to what we do,” he said. “We’ve never fought alone.”

To build ally and partner capacity, the service plans to rely on foreign military sales, building interoperability through doctrine, organization, training, materiel, leadership and education, personnel, facilities and policy, and having persistent engagement at all levels of command, the document stated.

Building interoperability between nations is “pretty feasible” when allies have common U.S.-built weapon systems such as Patriot, Dickinson noted. However, the service will still need to find ways to work with other missile defense platforms, he said.

“It’s a little more challenging when you have a weapon system that’s not necessarily a U.S.-built system,” he said. “But still, at the end of the day we’ve got to be able to interoperate and integrate with those systems. Because that’s how you build that collective capability.”

To successfully carry out the plans outlined in the roadmap, Karako advised the Army to “stay the course and don’t get distracted.”

“The history of Army air-and-missile defense is ... a windy path of things that are started and then stopped and then changed and then restarted and then stopped,” he said.

However, the Army will need to have “sustained and predictable funding” for missile defense capabilities, Dickinson said. Many of the efforts outlined in the roadmap are multi-year projects, he noted.

“We need consistent and predictable funding [for] more than two years so that we can keep that development moving along at the speed of relevance,” Dickinson said. “That document is based upon consistent and predictable and sustained funding so that we will have these capabilities by 2028.”

President Donald Trump’s fiscal year 2020 budget request called for \$4.6 billion in missile defense procurement including base and overseas contingency funds. One of the major missile defense efforts outlined in the request includes providing \$737 million for the production of 147 Patriot missile segment enhancement missiles and 40 launcher mod kits.

The roadmap was also based on the assumption that current research-and-development efforts — such as directed energy and advanced sensors — will yield new capabilities by 2028, the document noted.

“Significant delays to the programmed delivery dates of these capabilities will leave the force with capability and capacity shortfalls, resulting in the adversary gaining advantage with systems that will overmatch our defenses,” it said.

Dickinson said the roadmap could evolve in the future to accommodate potential changes in the operational environment or weapons programs.

“If we have a significant change to the operating environment, we would go in and update it,” he said. “If we had a significant change in one of the programs — whether it’s a funding or a performance perspective of that program — that might spur us to put an update out.”

<http://www.nationaldefensemagazine.org/articles/2019/6/10/army-charts-new-path-for-air-and-missile-defense>

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US ARMS CONTROL

Bulletin of the Atomic Scientists (Chicago, Illinois)

Decision to Keep Nuclear Weapons Data Classified Hurts National Security

By Heather Wuest

June 11, 2019

The Trump administration's decision to classify the total number of nuclear weapons that the United States possesses and the number of nuclear warheads dismantled in 2018 marks an abrupt change from the recent norm. Every year since 2010, the United States has chosen to declassify its nuclear stockpile and disarmament figures as part of an effort to encourage nuclear diplomacy and openness. But this year when the Federation of American Scientists asked the Pentagon for the figures to check its work in the Nuclear Notebook (a collection of world nuclear stockpile and disarmament information), the administration chose not to declassify.

Hans Kristensen—the director of the Federation of American Scientists Nuclear Information Project and a longtime author of the authoritative Nuclear Notebook column on world nuclear arsenals the Bulletin has published since 1987—is particularly vocal about the classification setback. The decision not to declassify the stockpile and decommissioned numbers, he says, “surrenders any pressure on other nuclear-armed states to be more transparent about the size of their nuclear weapon stockpiles” and is an “unnecessary and counterproductive reversal of nuclear policy.” This decision to classify comes at a time when the Trump administration says it is looking to ramp up talks with Russia and China on arms control, a negotiation that would be easier for United States diplomats if they could go in backed by the official numbers.

In a short conversation with Kristensen, I asked about the future of the Nuclear Notebook and if the Federation of American Scientists would continue to push for declassification. He made it clear how the government's simple denial of one information request can affect many aspects of an open and honest nuclear debate.

(Editor's note: This interview has been condensed and edited for clarity.)

Heather Wuest: Why do you think the government is changing the norm after making these numbers public for so many years?

Hans Kristensen: It was a surprise. When the Obama administration first chose to declassify the nuclear statistics in 2010, it was understood that the decision to keep this information classified would not just automatically be made public from now on but reviewed every year. The nuclear statistics can become declassified in two ways; an official can come out and give the public the numbers, or someone, in this case the Federation of American Scientists, can submit a request for declassification to happen. But, the decision to declassify has happened for seven years in a row. It has become normal for the United States government to make these numbers public.

HW: The government denied your 2018 declassification request. Do you have plans, or is there a protocol to re-ask? If so, is your team planning on asking again?

HK: We can re-ask, and we will continue to pursue the goal of getting this information declassified by whatever avenues are open to us.

It is important that the United States return to what we believe is the most appropriate form of transparency. The decision to keep this information classified is confusing. It is not like making this information public discloses anything bad, or of military significance. But the decision to keep the stockpile information secret has a significant impact on public perceptions both here in the United States and overseas. The practice of declassifying this number has been invaluable for US nuclear diplomacy. It grants the United States a positive level of transparency and credibility that the other nuclear weapons states don't have.

There is a tired counterargument that we usually hear that the US chose to release this information to encourage countries to do the same, but they didn't follow; therefore the US shouldn't declassify its numbers anymore.

HW: It has been my understanding that France and the United Kingdom have been declassifying their stockpile information.

HK: Yes, and that is all fine, but they are not our adversaries. We know British and French numbers pretty closely, and the United States government knows them as well. The hope was that offering the United States' nuclear numbers would inspire similar transparency in Russia and China, but that is a tougher sell. Increasing nuclear transparency globally is just one long-term objective. We want to convince the world that it's safe and advantageous to be transparent about their nuclear weapons data and convince them that they will not be more vulnerable if they do this.

Nuclear transparency accomplishes a lot; it eliminates fear mongering, rumors, worst-case scenarios, assumptions, and mistrust in other countries. There are a number of diplomatic benefits as well, judging from the reactions we have gathered from United States officials that have been involved in nuclear diplomacy over the last seven-to-eight years. Officials are also taken aback by the decision to keep the nuclear numbers classified because it so clearly undercuts advantages and goodwill towards the United States. Transparency gives diplomats room to act and maneuver, numbers that they can refer back to and use to engage other countries on issues of nuclear safety, security, and nonproliferation.

The decision to keep the numbers classified is doubly strange with the Nuclear Non-Proliferation Treaty Review Conference coming up next year. In that meeting, United States diplomats will try to persuade the treaty and negotiation regime that everything is OK. But they have no new nuclear negotiations to talk about, no actionable treaties, and now they're shut out of nuclear transparency. Lack of transparency will make it hard for diplomats to make the case for the United States in an international forum—a forum that depends on political goodwill to convince as many countries as possible to strengthen nonproliferation norms.

HW: The Nuclear Notebook spells out what nuclear stockpile numbers are, what they mean, and how much dismantlement is taking place. Why is it important to have these kinds of facts available beyond diplomacy?

HK: There are many levels of society that benefit from this sort of factual information. Even within the government, different branches have different levels of security clearance. Just because the government has its own number does not mean that those numbers can be used widely in an internal debate. When nuclear numbers are public information, it empowers officials to go out and talk about this. I have been in meetings with government officials who I know have the [official] numbers, [but] who were briefing Nuclear Notebook numbers so that they could talk about this in a way that would not challenge their secrecy.

As mentioned before, transparency provides many benefits not just for the government or diplomatic corps; transparency also informs the nuclear debate at large. When we publish these estimates, it enables people in other countries, where they are not allowed to research their own

countries national information—for example, in China or Russia—to be part of the conversation. These numbers enable intellectuals, scholars, journalists, what have you, who write stories about nuclear security issues to refer to a source that is not going to get them in trouble. That benefits the public debate, allows more to be included in the conversation about where nukes are in the world, what is their status, the trend, is it getting better or worse, all of these things. These are important conversations, conversations that will not go away, and it is essential to have factual information for these conversations to take place.

Having ready access to factual information about nuclear systems answers many basic questions like: What is this system? What does it do? How many are there? Have we had this before? What is the yield? Where are they stored? People need access to all of this information to be able to have important debates, develop an understanding, and to write about what is going on.

Access to ready factual information about nuclear security matters is also essential, in a broader societal sense, to the role of democracy. Nuclear weapons are inherently undemocratic. They are so big, powerful, important, the consequences so extreme, they create special rules, exceptions from normal oversight and democratic processes that we take for granted in the other parts of society. People need to know and understand these numbers because we are in a position to hold people accountable.

Nuclear weapons live in this sort of secret space. The secrecy is warranted but also often exaggerated. Choosing not to declassify the 2018 nuclear numbers is an example of the secrecy around nuclear matters being exaggerated too far. This decision has harmed United States interests, and government officials have no reference to any national security damaged by the seven years of prior declassifications. In this case, they have closed the book just because they don't like it, and this is fundamentally undemocratic. So, my team and I are going to try to push this, through requests, through conversations, legislation, and if necessary, through members of Congress.

<https://thebulletin.org/2019/06/hans-kristensen-on-how-the-tump-administrations-decision-to-keep-nuclear-weapons-data-classified-hurts-us-national-security/>

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The Hill (Washington, D.C.)

House Defense Bill Sets Stage for Contentious Nuclear Debate

By Rebecca Kheel

June 10, 2019

The House version of the annual defense policy would require an independent study on the United States adopting a “no first use” policy on nuclear weapons.

Nuclear issues are shaping up to be among the most contentious issues as Congress debates this year's National Defense Authorization Act (NDAA), with Republicans already coming out strongly against what's in the bill.

The bill, a summary of which was released Monday morning, does not go as far as Chairman Adam Smith (D-Wash.) has opined about in the past. But it does seek to “start that debate” about the appropriate size and cost of the nuclear arsenal, staffers told reporters ahead of the bill's release.

“The chairman feels strongly that the nuclear arsenal is too large, that we spend too much money on legacy weapons systems when we have emerging requirements like cyber, like [artificial intelligence], like space, which aren't getting the kind of focus that's required, and he wants to

reevaluate where we're spending money, if we're going to have another money to spend on these emerging things that are coming out," a staffer said.

Smith, who has long lambasted the price tag for nuclear modernization, pledged to make the issue a priority when he took control of the gavel after Democrats won back the House.

In hearings and speeches, he has questioned the need for the nuclear triad, said he wants to "kill" the low-yield warhead and blasted Trump for casting aside nuclear treaties.

In late January, Smith also reintroduced his No First Use Act that would make it U.S. policy not to use nuclear weapons first. Right now, U.S. policy leaves open the possibility of being the first to use a nuclear weapon in a conflict.

Rather than incorporating that bill, the NDAA requires the independent study on the implications of adopting such a policy.

Staffers also stressed the bill would not eliminate a leg of the triad, which refers to the three methods of delivering nuclear warheads.

"That didn't happen, it wasn't contemplated, it wasn't where [Smith] wanted to go," the staffer said. The NDAA has "been portrayed as some kind of attack on the nuclear enterprise, that is not what this is, and that's a bit over the top."

The bill does cut \$103 million from the Ground Based Strategic Deterrent, the in-development intercontinental ballistic missile meant to replace the Minuteman III. It also requires a report on options to extend the life of the Minuteman III to 2050.

As revealed in the strategic forces subcommittee's portions of the bill, the NDAA would also block the deployment of the new submarine-launched, low-yield nuclear warhead.

Every Republican on the subcommittee voted against the bill last week over the low-yield warhead provision and three other issues.

Signaling a continued fierce debate on the issue, Rep. Michael Turner (Ohio), the top Republican on the strategic forces subcommittee, wrote a Wall Street Journal op-ed Friday blasting the idea of blocking its deployment.

"The only reasoning for it is blind opposition to nuclear weapons," he wrote. "We must operate in the world we live in, not the one we wish for. America's adversaries possess this low-yield nuclear weapon capability and seem prepared to use them. Recalling our own weapons would be a grave mistake."

Republicans are also opposed to the provision included in the strategic forces subcommittee that would prevent the Trump administration from withdrawing from the Open Skies Treaty. The multilateral accord allows signatories to conduct unarmed observation flights over the entirety of other countries in hopes of increasing transparency and reducing the risk of miscalculation.

Republicans have targeted the treaty over alleged Russian violations, including claims that Moscow is denying U.S. requests to fly over some parts of the country.

The Trump administration is in the process of withdrawing from a separate arms control treaty with Russia known as the Intermediate-Range Nuclear Forces (INF) Treaty. Arms control advocates also fear the administration will scrap another nuclear treaty with Russia known as New START.

To address both of the INF and New START treaties, the NDAA would fence 20 percent of funding from the Defense secretary's travel budget until the Pentagon responds to a letter Smith and Foreign Affairs Committee Chairman Eliot Engel (D-N.Y.) sent in October.

The letter asked several questions on the effects of withdrawing from the treaties, including on long-term U.S.-Russia strategic stability.

The bill also seeks to reduce the risk of miscalculation leading to nuclear war by mandating the Pentagon establish senior working groups to talk to China, Russia and, if appropriate, North Korea on ideas to reduce that risk.

<https://thehill.com/policy/defense/447664-house-defense-bill-sets-stage-for-contentious-nuclear-debate>

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Homeland Preparedness News (Washington, D.C.)

Resolutions Introduced to Impose Sanctions on Weapons Sales to Saudi Arabia, UAE

By Douglas Clark

June 7, 2019

A group of lawmakers recently introduced 22 separate Joint Resolutions of Disapproval outlining Congress' role of approving arms sales to foreign governments.

Sens. Todd Young (R-IN), Bob Menendez (D-NJ), Lindsey Graham (R-SC), Chris Murphy (D-CT), Rand Paul (R-KY), Patrick Leahy (D-VT), and Jack Reed (D-RI) said the action stems from Secretary of State Mike Pompeo declaring an emergency waiving the congressional review process for 22 separate arms sales to Saudi Arabia and the UAE – a total of \$8.1 billion.

“Congress has an essential oversight role in the decision to sell weapons and we must ensure proper procedures are in place in any weapons transfer,” Young said. “In light of the ongoing humanitarian crisis in Yemen, we have an obligation to ensure the adequate guardrails are in place and that weapons transfers to Saudi Arabia and the United Arab Emirates do not exacerbate the conflict.”

Young said Iran remains the world's leading state sponsor of terror, but the threats briefed to members of Congress do not justify taking the Trump administration's step.

Citing an increased threat from Iran, the Trump Administration invoked authorities under the Arms Export Control Act that, in certain circumstances, grant the President exceptional emergency authority to waive the statutorily-required congressional review period for arms sales.

<https://homelandprepnews.com/stories/34282-resolutions-introduced-to-impose-conditions-on-weapons-sales-to-saudia-arabia-uae/>

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COMMENTARY

Omaha World-Herald (Omaha, Neb.)

Midlands Voices: Nuclear Modernization Is Essential for Deterrence

By Timothy J. Burke

June 8, 2019

The writer, president and CEO of Omaha Public Power District, is active with the Strategic Command Consultation Committee, the Offutt Advisory Council and the Nebraska Military Support Committee. He was appointed to the U.S. Air Force Civic Leaders Program by the Air Force chief of staff in 2018.

China is modernizing and adding to its nuclear arsenal. In recent years, Russia has prioritized modernizing its nuclear weapons, increasing range, accuracy and the number of delivery systems. North Korea is advancing its nuclear weapon capabilities and its long-range missiles. All are aimed at the United States or our allies.

Let us be realistic and see the world as it is. We are behind in nuclear modernization.

For 25 years, the United States has delayed modernizing the three legs of its nuclear deterrent. It is essential we modernize our air, land and sea nuclear forces to guarantee our safety and security by regaining technological superiority over China and Russia. Nuclear deterrence is the foundation of our national defense.

We can no longer kick the can down the road. The United States has extended our current nuclear weapons, strategic platforms, nuclear command and control systems and supporting infrastructure, well beyond their intended service life. But we must replace them with modernized systems now.

In our backyard, the new \$1.3 billion U.S. Strategic Command facility is critical to the nuclear command, control and communications operations of our nuclear triad and national defense. This new facility, scheduled to become operational this fall, is more than a new building. It is a strategic weapons system that will provide Offutt Air Force Base and U.S. Strategic Command with the capability to maintain and improve our nuclear triad superiority. Additionally, the recent March floods resulted in the need for more than \$420 million in supplemental funding to repair damage to this strategically important joint base.

The bottom line is: Nuclear deterrence works.

Nuclear weapons and our triad delivery system of bombers, ballistic missile submarines and intercontinental ballistic missiles remain the bedrock of deterrence. How do we know deterrence works? No one has used a nuclear weapon in 75 years.

If deterrence should ever fail, we must maintain a nuclear force that is modern, ready, reliable, responsive and large enough to withstand an enemy nuclear attack. And we must retain enough surviving nuclear force to deliver a decisive response that eliminates an enemy's ability to strike again. Credible nuclear deterrence communicates to our adversaries that their losses would be so devastating that it outweighs the risk of attacking us.

This is about protecting our homeland, our allies and our way of life. To help prevent nuclear proliferation, the United States provides "nuclear umbrella" protection to over 30 allied countries with whom we have treaties, including NATO members Japan, South Korea and Australia. As a global leader, we help protect the free world from dangerous adversaries.

Can we afford to modernize? A Congressional Budget Office report, “Projected Costs of U.S. Nuclear Forces from 2019 to 2028,” estimates the Department of Defense needs to invest \$326 billion annually over the next 10 years to modernize the nuclear triad. That is a lot of money. But it is only 6.4% of the defense budget at its peak, 3% for most defense budgetary years and less than 1% of our total federal budget.

Effective strategic deterrence that ensures the defense of our nation and our allies is, in fact, affordable. We need to let our senators and representatives in Congress know nuclear modernization is vitally important to our country.

We need our nuclear force to be safe, secure, ready and reliable. We need to modernize it now to reduce vulnerability to nuclear war, while maximizing adversary vulnerability. With strong, credible nuclear deterrence, we can continue to secure our nation, protect our allies and prevent the world’s most destructive weapons from ever being used again.

https://www.omaha.com/opinion/midlands-voices-nuclear-modernization-is-essential-for-deterrence/article_1b18b0ad-6801-5025-9cf1-b89f322217bb.html

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Real Clear Defense (Washington, D.C.)

Are U.S. Submarines Vulnerable?

By Peter Pry

May 30, 2019

The most survivable leg of the U.S. strategic nuclear Triad of bombers, land-based intercontinental ballistic missiles (ICBMs), and ballistic missile submarines (SSBNs) are the submarines. Ballistic missile submarines are the last best line of deterrence and defense to defeat surprise nuclear attack.

Today, U.S. strategic bombers and ICBMs have never been more vulnerable to a surprise attack. U.S. strategic bomber bases are reduced from 45 during the Cold War to just three today. Unlike Cold War readiness, today no U.S. strategic bombers are nuclear-armed on strip alert, ready to fly on short-warning. Even North Korea could destroy all U.S. B-52 and B-2 bombers by surprise nuclear attack on their three bases at Minot AFB (North Dakota), Whiteman AFB (Missouri), and Barksdale AFB (Louisiana).

U.S. ICBMs are reduced from about 1,000 during the Cold War armed with about 2,000 warheads, to 400 ICBMs with 400 warheads today.

Russia's SS-18 ICBM, armed with ten warheads, or China's DF-5 ICBM also ten warheads, could with just 50 missiles deliver 500 warheads having yield/accuracy combinations capable of a disarming surprise first strike destroying:

- All U.S. strategic command centers, like NORAD HQ at Peterson AFB and NORAD’s Alternate HQ inside Cheyenne Mountain;
- All U.S. strategic bombers;
- All U.S. ICBMs;
- Two-thirds of U.S. SSBNs (9-10 submarines) typically anchored at King's Bay, Georgia and Bangor, Washington.

Thus, the chief U.S. deterrent against surprise nuclear attack is 4-5 U.S. SSBNs normally on patrol at sea, from a total fleet numbering 14 ballistic missile submarines (reduced from 35-45 Cold War SSBNs). Today's 14 Ohio-class SSBNs will be replaced beginning in 2031 with a smaller new fleet numbering 12 Columbia-class SSBNs, slightly reducing submarines sustainable on daily patrol from 4-5 boats to 4 boats.

Anything that threatens the survivability of U.S. submarines on patrol at sea would fundamentally undermine U.S. nuclear deterrent credibility and could have the gravest consequences imaginable—including inviting a surprise nuclear attack.

Bad Idea—The W76-2

Due to Russian cheating on the 1991 Presidential Nuclear Initiative, the U.S. retains only about 180 aged tactical nuclear gravity bombs bunkered in Germany and Turkey. Gone are virtually all 15,000 U.S. tactical nuclear weapons, dismantled more or less unilaterally.

Today, Russia's advantage in tactical nuclear weapons is overwhelming, outnumbering the U.S. by at least 10-to-1, and perhaps much more. Russia originally had 20,000 tactical nuclear weapons which some official Russian sources claim is reduced to 7,000 (not to 2,000 weapons, assumed by most U.S. analysts, making Russia's superiority "only" 10-to-1, not 35-to-1). Moreover, Russia has new generation tactical and strategic nuclear weapons for specialized effects having no counterparts in the U.S. nuclear deterrent.

Russia's numerical and technological advantages in nuclear weapons support a dangerous new strategy of nuclear blackmail and warfighting, wherein Moscow thinks about prevailing over NATO through nuclear intimidation, limited nuclear use, or if necessary all-out nuclear war.

China is moving in the same direction, deploying increasingly sophisticated offensive nuclear capabilities. Until recently, North Korea has successfully been nuclear blackmailing the U.S. and allies for years. Pyongyang in 2017 successfully tested an H-bomb they describe as capable of "super-powerful electromagnetic pulse (EMP) attack" that could blackout North America.

The U.S., to address the crisis, plans to deploy a tactical nuclear weapon—the W76-2—on Ohio and Columbia ballistic missile submarines, to counter these growing tactical and strategic nuclear threats.

The Heritage Foundation's Michaela Dodge, in her excellent report "New START and the Future of U.S. Nuclear Strategy," notes the very grave implication of using the W76-2 to convert SSBNs into a tactical nuclear weapons platform:

"To understand the seriousness of the issue, one must realize that uploading a low-yield warhead on a Trident II D5 SLBM means that the United States is not able to use these particular missiles for its higher-yield nuclear warheads, thus trading off part of its strategic nuclear weapons capability for tactical nuclear weapons. The Trump Administration judged the developments in Russia's doctrine to be so serious that it was willing to make that trade."

Currently, U.S. Ohio-class SSBNs each carry 20 missiles (reduced from 24 missiles), with a mix of high-yield strategic warheads, some missiles armed with the W76-1 warhead (100 kilotons) and some with the W88 warhead (475 kilotons). Their yield/accuracy combinations can hold at risk hundreds of adversary highest-value targets, including hardened underground bunkers, military bases, and industrial targets.

The capability of U.S. SSBNs to threaten adversary highest-value targets deters nuclear war. In the event of nuclear conflict, our high-yield W-76-1 and W88 warheads would deter attack against U.S. highest-value targets—including U.S. cities and 330 million American lives.

The W76-2 tactical nuclear weapon is just the primary of the W-76-1, reducing its yield from 100 kilotons to 5 kilotons (and thereby also continuing the U.S. unilateral moratorium on developing a new design, advanced nuclear weapons).

The W76-2 is an act of desperation, dangerous to U.S. national security:

Every W76-2 that replaces high-yield W76-1 and W88 warheads reduces U.S. capability to threaten adversary highest-value targets and puts at greater risk U.S. highest-value targets, including U.S. cities.

Launching a tactical nuclear weapon like the W76-2 from a ballistic missile submarine runs the very high risk the adversary will assume the worst, that he is under attack by a high-yield W76-1 or W88, and escalate to a massive preemptive strategic strike against the United States. On January 25, 1995, Russia nearly did precisely this when Moscow mistakenly thought a Norwegian meteorological rocket was an incoming U.S. submarine missile performing an EMP attack (see my book *War Scare: Russia and America on the Nuclear Brink*).

The effectiveness of W76-2 as a tactical nuclear weapon, given its ballistic trajectory, accuracy, and time-on-target (launched from an SSBN that may be thousands of kilometers away) is dubious. Unlike Russian advanced tactical nuclear weapons having adjustable yields and are "clean" making little or no radioactive fallout, W76-2's yield is not adaptable to the tactical situation and being plutonium is very "dirty." Presidents and especially NATO allies may be loath to explode over Europe even one W76-2, 5-kilotons of radioactive fallout, enough to irradiate the territories of smaller NATO European states.

Most importantly, the W76-2 tactical nuclear mission threatens the far more critical strategic mission of SSBNs by risking the submarine's destruction. The most plausible tactical nuclear scenarios entail launching only one or a few weapons early in a conflict—giving the adversary a golden opportunity to locate and destroy our submarines.

The late great James Schlesinger (former Secretary of Defense under two presidents, CIA Director, and one of our nation's most profound strategic thinkers) once warned: "As soon as you fire, you expose the boat."

Washington elites, encouraged by the U.S. Navy and Department of Defense, have for too long assumed U.S. SSBNs are invulnerable, a dangerous assumption also in the Nuclear Posture Review that advocates W76-2 giving a tactical nuclear mission to ballistic missile submarines--because of their alleged invulnerability.

However, even during the Cold War, serious people warned that Moscow—using means much less sophisticated than those available today—could pose significant threats to the survival of U.S. submarines. Forgotten, those Cold War threats and new threats arriving on the scene largely ignored should be considered now—before we make the destruction of our SSBNs easier for adversaries by the W76-2.

Espionage Threatens SSBNs

Old fashioned spy-craft and new-fashioned cyber-espionage could pose a mortal threat to U.S. submarines—as spying did during the Cold War. Cold War Soviet agent John Walker and his spy ring, for example, had access to information disclosing positions of U.S. submarines that he provided to the USSR. Soviet double-defector KGB officer Vitaly Yurchenko had Walker in mind when, in describing how the KGB scored against the U.S. Navy, he remarked: "We deciphered millions of your messages. If there had been a war, we would have won."

U.S. Navy Secretary, John Lehman, shared Yurchenko's opinion of the damage done by the Walker spy ring: "Had we been engaged in any conflict with the Soviets, it could have had the devastating consequences that Ultra had for the Germans."

Then CIA Director, Admiral William Studeman, said the Walker ring betrayal of U.S. Navy secrets created "powerful war-winning implications for the Soviets" and "jeopardized the backbone of this country's national defense." Also, former CIA Deputy Director, George Carver, who spent much of his 24-year career working cryptography and communications, believed Moscow could continue exploiting the Walker data "for years and even decades." Carver:

"The United States...can never be positive that it has locked all the barn doors...cannot be totally confident about the security of its communications, particularly its military and especially naval communications. And the damage thus was done...could significantly, if not irrevocably, tilt the very strategic balance on which our survival as a nation depends."

Whether and to what extent Russia and China can find U.S. SSBNs is unknown. Maybe they are entirely in the dark. Or, maybe their spies know the location of every U.S. submarine.

Oceans Transparent Already?

During the Cold War and today, Moscow for decades spent vast resources on an enormous array of technologies, including satellites like EORSAT, trying to locate U.S. submarines hiding at sea. Today, Russia and China have hydroacoustic capabilities for locating SSBNs far more technologically sophisticated than those available to the USSR during the Cold War.

Cold War defense analyst Roger Speed, then a consultant to the U.S. Navy, calculated Soviet ships sweeping the oceans with towed hydrophone arrays could locate U.S. SSBNs for destruction in two days. According to Speed's book *Strategic Deterrence in the 1980s*:

"The development of a line array of hydrophones that can be towed through the water represents a potential breakthrough in acoustic ASW technology....this new technology could pose a serious threat to SSBNs. If the detection range is...at least 50 nm, the SSBN patrol area can be searched in two days or less."

Modern technology is making possible miracles, such as rendering transparent the jungles of Guatemala. LiDAR (Light Detection And Range) in 2018 used airborne laser technology to penetrate Guatemala's thick jungle canopy, discovering 60,000 previously unknown Mayan ruins, including hundreds of previously hidden Mayan cities and towns, revolutionizing archaeology and re-classifying the Maya as among the greatest civilizations. LiDAR's revolution in surveillance technology is the product of collaboration between private sector Teledyne Optic Titan and the University of Houston—not great power nation states.

We should not rule out the possibility Russia and China have achieved a technological breakthrough in locating submarines—which they would keep secret until wartime. If submarines can be found, they can be destroyed.

Anti-Ship Ballistic Missiles (ASBM)

ASBMs are a new technology that combines ballistic missiles with maneuvering warheads having electro-optical, infrared, or other seekers to precisely target even moving vessels for destruction. China's DF-26 and DF-21 pose long-range threats to U.S. aircraft carriers, outranging carrier aircraft, threatening to upset the balance of power in the Pacific.

Even Iran has developed ASBMs, the medium-range Khalij Fars (Persian Gulf) and short-range Fateh-110, that have been used successfully to target a ship, appearing to demonstrate an accuracy of 8 meters. ASBMs armed with nuclear warheads could destroy submarines, even if the SSBN

location is not known precisely, just approximately. The underwater shockwave from a nuclear weapon would have a very large lethal radius, extending many kilometers against an SSBN.

ICBMs too could be used to destroy SSBNs with a nuclear barrage of their ocean patrol area, even with considerable uncertainty about the submarine's location. A 1981 study by the U.S. Office of Technology Assessment suggested the Soviets could conceivably attack submarines with ICBMs.

President Reagan's White House Science Advisor, George Keyworth, in a 1984 TV interview warned: "A...warhead such as the SS-18 carries ten of when dropped in the water...will destroy any submarine within a distance of about seven miles." According to Keyworth, if the Soviets could roughly locate U.S. submarines, "find out approximately where they are, not track them the way we did in the Second World War, but just know approximately if they are in that 100-mile by 100-mile square...then they can be destroyed in a preemptive attack."

My book *Nuclear Wars: Exchanges and Outcomes* (1990) calculated that Moscow, using only their SS-19 ICBMs, could destroy all U.S. SSBNs, if their at-sea locations are very roughly known, at a time when the U.S. had 36 SSBNs (not as today 14 reducing to 12 SSBNs). My calculations indicated our submarines will be most vulnerable if their locations are disclosed by launching even one missile for a limited nuclear strike—as is now planned for tactical nuclear scenarios employing the W76-2.

Poseidon

My report *POSEIDON: Russia's New Doomsday Machine* (2018) warns that this new Russian nuclear autonomous "torpedo" may be a secret weapon to destroy U.S., British and French SSBNs. Poseidon is a nuclear-powered robot submarine or torpedo, armed with a nuclear warhead described by various Russian sources as ranging from 2-200 megatons, the later by far the most powerful nuclear weapon ever built. The yield may be mission selectable.

Moscow advertises Poseidon's mission as a doomsday machine, designed to raise radioactive tsunamis to inundate the U.S. coasts, or to destroy U.S. ports, or to trail and destroy U.S. aircraft carrier groups. None of these missions makes sense for Poseidon, as Russia can already accomplish all of them by other existing means.

The one mission that makes the most sense for Poseidon, not mentioned by Russia, is trailing and destroying at-sea SSBNs. Nuclear-powered, Poseidon could tail SSBNs for months or years, waiting outside ports for their target to resume patrols. Artificially Intelligent, Poseidon could be programmed to recognize the acoustic signature of its target submarine and detonate on command. The lethal radius of a 100-megaton warhead against submarines is over 100 kilometers. Russia plans to deploy 32 Poseidons. Perhaps not coincidentally, enough to assign two to tail each of 12 U.S. Columbia SSBNs and 8 Poseidons to target the 8 SSBNs of allies Britain and France.

EMP Anti-Submarine Warfare (ASW)

Super-EMP weapons deployed by Russia, China, and probably North Korea can generate 100-200 kilovolts/meter, far exceeding the U.S. military standard for EMP hardening—50 kilovolts/meter. Thus, across North America, even the best protected U.S. military forces—including the strategic Triad and its C3I—could be paralyzed.

U.S. SSBNs at sea cannot launch without receiving an Emergency Action Message (EAM) from the president. The EAM includes an unblocking code to arm nuclear warheads. Thus, submarines cannot execute nuclear strikes without the EAM.

A Super-EMP attack could destroy satellites, land-based VLF communications, TACAMO aircraft, and other redundant means to convey EAMs to submarines on patrol, neutralizing them. EMP could also attack submarines at sea directly.

A high-yield warhead detonated 400 kilometers above the ocean would generate an EMP field 2,300 kilometers in radius, an area nearly as large as North America. E3 EMP would penetrate the ocean depths and possibly couple into submarines, damaging electronics. Submarines would be especially vulnerable when deploying their very long antennae—which they need to do in order to receive EAMs.

W76-2 Obama's Bad Idea?

Returning to the W76-2, which is attributed to the Trump Administration because it appeared in the most recent Nuclear Posture Review, I wonder if this bad idea originated in the Obama Administration and is advancing through Obama-holdovers in the Pentagon?

The Obama Administration's policy was to reduce U.S. reliance on nuclear forces, hoping eventually to achieve "a world without nuclear weapons." They surely noticed Britain's adoption of a tactical nuclear mission for their Vanguard ballistic missile submarines contributed, by accident or design, to Obama's anti-nuclear agenda.

Britain's 1998 Strategic Defence Review began the U.K. on a slippery slope toward unilateral nuclear deep reductions. In 1998, consolidating tactical and strategic nuclear missions on Britain's SSBNs provided a rationale to cancel this role for bombers, eliminating nuclear-armed aircraft and turning the UK's nuclear deterrent into an SSBN monad. Perhaps not coincidentally, Rep. Adam Smith, Democrat Chairman of the House Armed Services Committee, advised by such international anti-nuclear groups as Ploughshares, has proposed eliminating U.S. strategic nuclear bombers and ICBMs and relying on an SSBN monad reduced to 6 boats.

The UK's 1998 Strategic Defence Review approved replacing high-yield strategic warheads with low-yield tactical warheads on submarines, while reducing the warhead load per missile, and also reducing the readiness of their SSBNs to fire, extending operational procedures to launch missiles "to days rather than minutes."

The UK's 2010 Strategic Defence and Security Review reduced Vanguard SSBN missiles per boat from 16 to 8. It also further reduced operational warheads to 5 per missile, thereby reducing the number of operationally available warheads "from fewer than 160 to no more than 120" compared to 520 during the Cold War.

While Ploughshares would approve, these measures significantly decrease the capability and credibility of the UK's strategic deterrent. Some make their SSBNs more vulnerable to the threats described earlier.

Recommendations

Do not deploy W76-2 warheads on U.S. ballistic missile submarines or otherwise degrade SSBN capability to survive, threaten adversary highest-value targets, and deter attacks against U.S. highest-value targets, including American cities.

Deploy at least 2,000 tactical nuclear weapons to reduce Russia's preponderant advantage. Nuclearize the U.S. Navy by proliferating preferably nuclear-armed cruise missiles on attack submarines, guided missile cruisers, destroyers and other vessels that can operate in forward areas to maximize survivability, accuracy, and time-on-target for tactical situations.

To reduce escalatory possibilities, as during the Cold War, U.S. strategic and tactical nuclear platforms should not mix capabilities and missions, but be distinct as possible.

A crash program to develop advanced new generation nuclear weapons should begin immediately. A crash program to deploy space-based missile defenses that could initially defend U.S. SSBNs and

other Triad assets, eventually shield the U.S. and allied homelands and possibly render nuclear missiles obsolete, should begin immediately.

A highest-priority crash program to harden U.S. military and critical civilian infrastructures from EMP and cyber-attack should begin immediately. The potential of Russia, China, and even North Korea to possibly paralyze the U.S. Triad, including SSBNs on patrol, with an EMP "cheap shot" invites aggression.

Dr. Peter Vincent Pry is Executive Director of the Task Force on National and Homeland Security, served as Chief of Staff of the Congressional EMP Commission, Director of the U.S. Nuclear Strategy Forum, on the staffs of the Congressional Strategic Posture Commission, the House Armed Services Committee, and the CIA.

https://www.realcleardefense.com/articles/2019/05/30/are_us_submarines_vulnerable_114464.html

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The Hill (Washington, D.C.)

Stop the Low-Yield Trident Nuclear Warhead

By Steven Pifer

June 8, 2019

On Tuesday, the House Subcommittee on Strategic Forces debated the draft Fiscal Year 2020 National Defense Authorization Act.

It voted out, on party lines, language that prohibits deployment of a low-yield warhead on the Trident D5 submarine-launched ballistic missile. That makes sense: The rationale for the warhead is dubious, and the weapon likely would never be selected for use.

The Trump administration's 2018 Nuclear Posture Review called for a low-yield warhead on some Trident D5 submarine-launched ballistic missiles (SLBMs). The plan modifies a W76-1 warhead, which has an explosive yield of 100 kilotons — seven times the size of the weapon used against Hiroshima — to produce the W76-2, reportedly with a yield of "just" five-seven kilotons.

Adding this weapon to the arsenal would risk lowering the nuclear threshold. To be sure, Pentagon officials assert that new low-yield weapons would not lower the threshold.

Yet the Nuclear Posture Review argued for low-yield weapons out of concern that Russia might feel it could use its "small" nuclear weapons free of concern about U.S. retaliation because the United States arsenal consists mainly of large-yield weapons.

So, at a minimum, the goal of new U.S. low-yield nuclear weapons would appear to be to persuade Moscow that the United States is more likely to go nuclear.

It is in the U.S. interest to maintain the highest possible threshold against the use of any nuclear arms. We should avoid steps that might signal, even inadvertently, that the use of "small" nukes is somehow acceptable.

Moreover, the United States already has low-yield weapons and is modernizing them. Next year, serial production of the B61-12 nuclear gravity bomb will begin. That bomb, the result of a program costing \$8-10 billion, supposedly has a variable yield range of 0.3 kilotons to 50 kilotons.

Advocates of placing the W76-2 atop Trident SLBMs argue that the W76-2 could penetrate sophisticated air and missile defenses and reach its targets in minutes rather than hours. That's true, but the U.S. military already is investing many tens of billions of dollars in the F-35 Joint Strike Fighter and B-21 bomber.

Those aircraft are advertised as having stealth and advanced electronic warfare capabilities specifically designed to penetrate and defeat sophisticated air defenses.

As for flight times, there may not be that much difference between minutes and hours for most non-strategic nuclear missions. That is especially the case in missions for which the primary purpose of delivering a low-yield warhead is to demonstrate U.S. resolve and try to arrest escalation rather than destroy a particular target.

Even if the W76-2 is deployed, would it ever be launched, even in a situation in which nuclear weapons had been used or were on the brink of use?

SLBMs on submarines at sea constitute the most important and most survivable leg of the U.S. strategic triad, because the submarines can hide underwater and have lots of ocean in which to roam. Each submarine at sea carries a significant portion of the survivable U.S. nuclear deterrent.

The problem with launching an SLBM with a W76-2 is that it would reveal the submarine's location. The submarine could maneuver away from the launch point, but it still would have compromised its general position, putting at risk the boat and the other 80-90 warheads it carried. Would the U.S. military run that risk, particularly given the availability of other low-yield options?

A bigger problem is discrimination. The Russians could not tell whether a launched SLBM carried a W76-2 or a W76-1 (100 kilotons) or, for that matter, a W88 (450 kilotons) until the weapon (or weapons) detonated.

The circumstances in which Washington might consider using a low-yield nuclear weapon against Russia or Russian military forces almost certainly would result from escalation of a conventional conflict. By far the most likely location for U.S.-Russia conventional conflict is the Baltic region in Europe.

Assume a conventional NATO-Russia conflict in the Baltics, and Russia escalates by using a few "small" nuclear weapons. A decision to respond with a W76-2 would mean launching an SLBM from the Atlantic Ocean.

The problem is that a launch from many parts of the Atlantic toward the Baltics would also appear, at least initially, to be a launch against Moscow.

Would the U.S. leadership launch a W76-2 — and run the risk that the Russians misread it as larger warhead intended to flatten Moscow in a decapitation strike — when F-35s and B61-12 bombs are available in Europe (as they will be in the early 2020s)?

The W76-2 makes little strategic sense, could inadvertently lower the nuclear threshold and likely would never be used, even in the most dire circumstances.

The Trump administration made a mistake by deciding to produce it. Congress should use the 2020 National Defense Authorization Act to correct that mistake and prohibit its deployment.

Steven Pifer is a William Perry fellow at Stanford University's Center for International Security and Cooperation.

<https://thehill.com/opinion/national-security/447514-stop-the-low-yield-trident-nuclear-warhead>

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Defense One (Washington, D.C.)

Save This One Piece of the INF Treaty

By Greg Thielmann

June 10, 2019

Taken off life support in February by the Trump administration's suspension of compliance, the Intermediate-Range Nuclear Forces Treaty will be officially declared dead on Aug. 2. We must now urgently consider how to keep alive one part of the agreement — the ban on intermediate-range ballistic missiles — until a new INF arms control treaty can be born.

When the Treaty was first being negotiated, such missiles were causing the most concern in Moscow and Washington, as these nuclear-armed, first-strike weapons had not been captured by the limits on strategic systems in the SALT I and SALT II Treaties. In 1979, NATO decided to respond to burgeoning Soviet deployments of the SS-20, a new triple-warhead ballistic missile with a range of 5,000 kilometers. The alliance pledged to deploy U.S. ballistic and cruise missiles to five member countries in Europe, while simultaneously seeking equal limits between the sides in order to remove the Soviet advantage.

The Soviets were determined to prevent deployment of new U.S. missiles, especially 108 highly accurate Pershing II medium-range ballistic missiles destined for West Germany, which the Kremlin regarded as a short-warning threat to Soviet command-and-control centers around Moscow. When they failed to prevent deployments through political pressure, the Soviets ultimately accepted an agreement to eliminate all ground-based INF missiles on both sides.

If ballistic missiles helped birth the INF Treaty, the issues most responsible for its death revolved around cruise missiles — specifically, the actual range of Russia's 9M729 land-attack cruise missile and the potential capability of the U.S. Aegis Ashore Mark-41 missile defense launcher to launch INF-range, land-attack cruise missiles. Beginning in 2014, both sides exchanged public accusations; senior U.S. officials, in particular, complained to Russian counterparts about the damage Russia's violation was doing to the INF Treaty. Unfortunately, neither side chose to fully exploit the treaty's mechanism for resolving such compliance disputes.

Then the Trump administration began to argue that staying in the treaty was dangerous because the agreement did not include limitations on Chinese INF-range systems — a stance that undermined its previous argument that Russia's non-compliance was forcing Washington to consider withdrawing. Suspicions grew that the Russian violation was “an excuse” to leave rather than “the reason,” particularly since there had been no serious diplomatic efforts to engage China in INF arms control.

Regardless of which country was more responsible for the failure to resolve compliance issues around cruise missiles—or whether immediate inclusion of China in the INF Treaty is at all feasible—there is now a more urgent matter. Both parties must figure out how to retain the current ban on INF-range ballistic missiles. The ban is crucial to European security and for maintaining stability between the countries possessing more than 90 percent of the world's nuclear arsenals.

On the U.S. side, the first step will be up to Congress, as the executive branch is moving briskly toward a post-INF world. The same day that the Trump administration formally provided the required six months' notice of withdrawal from the treaty, it suspended its own compliance, discouraging any last-minute attempts to save the treaty. With a green light from U.S. policy-makers, the military and defense industries quickly developed plans for at least two new, land-based ballistic missiles of INF-range. One of them, an IRBM with a range of 3,000 to 4,000 km, is

already slated for a test flight in November and deployment in five years. (There was no security threat requiring the Pentagon to conduct non-treaty-compliant military testing and no previous deployment timetable that had to be met.) And the Army is pursuing several other ballistic missile systems with INF ranges.

Meanwhile, Russian President Putin has pledged to “mirror” any U.S. violations, although the Russians have implied that their initial response would be land-based deployments of the shipborne SM-54 Kalibr cruise missile.

Once either side flight-tests or deploys previously banned ballistic missiles, it will become much more difficult to prevent a full unraveling of INF arms control constraints. The Democratically-controlled House of Representatives must put a hold on funds going toward all such systems until the administration devises a coherent policy toward negotiating a substitute for the INF Treaty.

In its most practical form, an INF ballistic missile ban could simply require a political commitment from the treaty’s five parties — the United States, Russia, Belarus, Ukraine, and Kazakhstan — that they would take no action inconsistent with the ban on the development and deployment of INF-range ballistic missiles. The parties have so far abstained from INF-range ballistic missile development and deployment. Continuing to do so would limit damage and build trust, facilitating the negotiation of a new framework for INF arms control.

In an upcoming publication of the U.S.-German-Russian Deep Cuts Commission of which I am a member, non-governmental arms control experts have articulated three ambitious options for future INF arms control, including proposed bans on:

- * Nuclear-armed ground-based cruise missiles and drones.
- * Nuclear-armed sea- and air-based non-strategic missiles.
- * Arming any non-strategic delivery vehicle with nuclear gravity bombs.

Pursuing any of these options would take time and would require a stronger demonstration of will and determination than we have seen from the current leaders in Washington and Moscow. But taking immediate action to preserve the INF Treaty’s ballistic missile ban is a good first step.

Greg Thielmann is a board member of the Arms Control Association. A 25-year veteran of the Foreign Service, he served as State Department advisor to the U.S. delegation at the opening round of the INF Negotiations, in the U.S. embassy in Bonn during INF missile deployments to Germany, and in the ...

<https://www.defenseone.com/ideas/2019/06/save-one-piece-inf-treaty/157584/>

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Defense News (Washington, D.C.)

Distributed Deterrence: The Continuing Utility of ICBMs

By Thomas Karako

June 7, 2019

Like its three predecessors, the 2018 Nuclear Posture Review reaffirmed the need for the nuclear triad of bombers, submarine-launched ballistic missiles and intercontinental ballistic missiles. Now comes the hard part.

With the authorization and appropriation cycle for fiscal 2020 now underway, the United States is moving closer to the coming bow wave of modernization efforts necessary to recapitalize it. During the post-Cold War period, when the U.S. faced few real challenges to its military superiority, it was easy to be lax on conventional and nuclear modernization alike, first while taking the peace dividend and then later while focused on counterterrorism.

Geopolitical rivalry is back, and with it a renewed need to steward nuclear deterrence — what former Secretary of Defense Ash Carter called the bedrock of American national security.

One underappreciated attribute of the triad is the distributed quality provided by land-based ICBMs. The program to replace and modernize the ICBM leg is known as the Ground Based Strategic Deterrent. But GBSD is not just about the missile. The program includes silo refurbishment, ground systems and infrastructure, and nuclear command-and-control improvements that will ensure its viability into the late 21st century.

The GBSD modernization program will enhance penetration of enemy missile defenses, improve cyber protection, ease the sustainment and guidance package update process, improve surveillance of the missile fields, permit rapid re-targeting, and perhaps increase the missiles' payloads to accommodate advanced delivery systems in the future. The program is challenged, however, by a daunting bow wave of increased modernization costs, competing Air Force priorities and the production of solid-rocket motors.

This suite of improvements is long overdue. Originally designed to last for about 10 years, today's nearly 50-year-old ICBMs are rapidly nearing the end of their service lives, primarily due to aging of their solid-rocket motors.

In the 1950s, the Air Force got into the ICBM business in short order, pulling together a national team to develop and field liquid-fueled Atlas and Titan missiles in the span of a few years. The development of solid-fuel missiles produced the more reliable and prompt Minuteman family, with two variants in the 1960s and the Minuteman III deployed in 1970. In 1990, there were a total of 1,000 deployed ICBMs, of several types.

Today, some 400 Minuteman III missiles remain, which were first deployed a half century ago but have had their avionics and motors replaced. Since then, a combination of regular testing and aging will result in a shortfall of available ICBMs by the early 2030s. The GBSD program must remain on schedule to prevent that shortfall.

The distributed and hardened characteristics of ICBMs creates their quality as a so-called warhead sink. Under current assumptions, each of at least 400 silos would require two warheads each. Any adversary would have to expend a considerable portion of their strategic nuclear force to disable them all. Raising the threshold for nuclear attack strengthens deterrence.

The ICBM leg served its purpose in the Cold War, but the distributive principle will remain important for the foreseeable future. A nuclear force without ICBMs would have a very small number of aim points: two bomber bases and a small number of submarines operationally

deployed. Nuclear bombers have long been off alert, so on any given day could be concentrated rather than dispersed. America's stealthy nuclear submarines remain the most survivable leg, but the removal of ICBMs would permit adversaries to redirect efforts on anti-submarine warfare.

Broad technological and strategic developments are making the principle of distribution more salient for nuclear and conventional military operations alike. As the National Defense Strategy notes, U.S. military superiority can no longer be taken for granted. The onetime American monopoly on precision guidance and exquisite intelligence, surveillance and reconnaissance is now over, and the military services have begun to adapt accordingly.

Both the Navy's new concept of Distributed Maritime Operations and the Army's Multi-Domain Operations grapple with the specter of suppression and overmatch from near peers. Both employ maneuver, mobility and distribution to increase the number of aim points and complicate an enemy's surveillance and targeting.

Competing both with its service culture and large bills coming due on other platforms, the Air Force's attention to ICBMs has waxed and waned. Other priorities have included the B-21 bomber, the new tanker, and the F-35.

This squeeze may intensify in the coming years as the annual cost of nuclear modernization begins to rise. But there is no time to lose. Although the defense budget process is far from over, a recent markup by House appropriators cut \$118 million from GBSD funding for 2020 — a 20 percent reduction from the budget request. Although the cost for GBSD is substantial, it is lower than the procurement and operational cost for either the nuclear submarines or the bomber.

Another potential obstacle is limitations of the domestic industrial base to build a lot of solid-rocket motors. Assuming things go as planned, the Air Force could next year move onto engineering, manufacturing and development for what is expected to be about 640 multistage missiles.

In the defense bill drafts released this week, the House Armed Services Committee report language once again expressed congressional concerns that rocket motor production could slow the GBSD program. In its next report to Congress on the matter, the Air Force may wish to consider using a team of suppliers or some kind of a national team in order to meet capacity, rather than a single source.

These challenges can and must be overcome. The stabilizing quality of distributed ICBMs remains critical to nuclear deterrence. Four nuclear posture reviews over 25 years have affirmed and reaffirmed the need for the triad. Although operated by the Air Force, the contribution of ICBMs to deterrence is a national asset. Congress has been right to question the program's cost and the precarious state of domestic solid-rocket motor production, and other ways to mitigate risk. Given the coming cliff in the early 2030s, it is incumbent upon the Air Force and congressional representatives to mitigate further delays with the future of ICBMs and the triad as a whole.

Thomas Karako is a senior fellow in the International Studies Program at the Center for Strategic and International Studies.

<https://www.defensenews.com/opinion/commentary/2019/06/07/distributed-deterrence-the-continuing-utility-of-icbms/>

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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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