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Feature Report

“Back from the Brink: A Threatened Nuclear Energy Industry Compromises National Security”.

By Michael Wallace, Amy Roma, and Sachin Desai. Published by the Center for Strategic & International Studies; July 17, 2018

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The U.S. commercial nuclear energy industry helps the U.S. government meet several key national security objectives. But the industry is struggling to survive. We [CSIS] are not the first to say this and we will not be the last.

We are also not the first to call for U.S. government support for this struggling industry—but this call to action is different. We are urging U.S. government action—not with the focus of protecting the commercial sector, but with a focus to protect U.S. government interests impacted by the decline in the commercial nuclear energy sector. This is a key distinction and warrants attention at the highest level of government. This paper is not intended for those in the nuclear energy industry. They know the issues. It is intended for the U.S. government and the U.S. public—to explain the reasons why U.S. government action is critical at this moment, and to explain how we can move forward in a manner that best protects our country’s national security.

But what are these national security objectives and how are U.S. government and national security interests undermined by a decline in the commercial nuclear energy sector? In this paper we explain the critical importance of the U.S. commercial nuclear energy industry in support of U.S. defense, research, economics, geopolitics, and international nonproliferation. We walk through how the U.S. commercial nuclear energy industry arose out of and with the support of the U.S. government—and how President Eisenhower’s reasons for bringing nuclear energy to the world in the 1950s are the very same reasons that the United States needs to continue to do so today. We unravel the web of interconnections between the commercial nuclear energy industry and achieving U.S. government and national security goals. And we explain the impact that a declining commercial nuclear energy sector has on achieving those crucial goals.

Moreover, we set forth a recommended path forward to come “back from the brink” and preserve critical commercial nuclear energy sector assets—including technology, knowhow, people, and influence—before they are lost forever, and U.S. national security is damaged as a result.

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NUCLEAR WEAPONS

Defense News (Washington, D.C.)

3 Thoughts on Hypersonic Weapons from the Pentagon's Technology Chief

By Aaron Mehta

July 16, 2018

WASHINGTON — If military terms can be described as clothing, then hypersonic weapons are the couture, stylish, must-talk-about item of the summer.

The technology behind them. The theory around them. The questions of what competitors are saying and doing with them. Nearly every discussion about future capabilities for America's defense includes an early mention of hypersonics.

The point man for developing that capability is Michael Griffin, a former NASA administrator who is now the first-ever undersecretary of defense for research and engineering. So when he sat down with reporters July 12 to discuss a range of issues, it wasn't a surprise hypersonic weaponry came up.

"My view is that this is not an advantage that we can concede to people who wish to be our adversaries," he said bluntly when asked about the systems. "And there is no reason why we should."

Here are three key points from Griffin that show his thinking as he helps craft America's way forward with the technology.

1. Hypersonic weapons' greatest impact are as tactical, not strategic, weapons.

In March Russian President Vladimir Putin made waves when he used an annual speech to unveil what were described as nuclear-capable hypersonic weapons.

But paraphrasing comments by Secretary of Defense Jim Mattis, Griffin noted Russia already has nuclear-capable intercontinental ballistic missiles, so a strategic hypersonic weapon doesn't change the map much.

Instead, Griffin says, the issue to focus on is the "tactical capability that these sorts of weapons bring to theater conflicts or regional conflicts. Very quick response, high speed, highly maneuverable, difficult to find and track and kill."

Officials and analysts have noted that hypersonic weapons, thanks to their maneuverability, could be particularly effective as tactical weapons against U.S. naval assets.

2. Space-based defense won't work.

Griffin is on record as wanting to prototype and develop new kinds of missile defense systems. But he sees no solution based in space that would match up with hypersonic capabilities.

"A space-based hypersonic defense is not a practical approach, in my way of thinking. Even if you had space-based interceptors, it would be technically the wrong way to do it," Griffin said, due to both the speed of the hypersonic missile and the fact it flies fairly low to the ground.

But space will still play a role in defeating a hypersonic weapon, the same way it does for any sort of strategic asset.

“The utility of space for hypersonic defense is in the indications of warning, the launch detection, the surveillance, acquisition, tracking — the whole arena of persistent global timely awareness,” he said. “You have to do that from space, I don’t know another way to do it. But that is just part of the overall space surveillance task that the DoD has.”

3. The U.S. remains ahead in research, and testing is about to increase.

While there has been a lot of hype around Russia and Chinese investments in hypersonics, Griffin made it clear he believes “we are, have been [and] will remain the world leader in this research area.”

The U.S. could have gone down the path of pursuing more concrete systems, had it wished, Griffin said, but “we didn’t see a need for it. But our adversaries get a vote, and they voted. So we’re going to see their hand and raise them one, in both offensive and defensive capabilities.”

To that extent, Griffin intends to speed up the research and prototyping going into hypersonic weapons, saying there are “capabilities you’ll see maturing through the 2020s.”

“You’re going to see our testing pace stepping up, and you’re going to see capability delivery from the early ‘20s right through the decade,” he added.

But what about China and Russia’s timeline?

Griffin said he’s uncomfortable describing what they have shown off as “operational” at this point, although he acknowledged that the tests have been notable.

“How close they are to operational, I just don’t know. But I’m worried about our end of things,” he said.

<https://www.defensenews.com/air/2018/07/16/3-thoughts-on-hypersonic-weapons-from-the-pentagons-technology-chief/>

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The National Interest (Washington, D.C.)

North Korea: We Asked 9 of the World’s Leading Experts What Happens Next

By Mitchell Blatt

July 18, 2018

Is war still possible? Could we convince Kim to give up his nukes? An all-star group of Korea watchers gives us some insights.

fter a heavily choreographed summit between U.S. President Donald Trump and North Korean leader Kim Jong-un in Singapore on June 12, 2018, talks between the two countries appear to have hit roadblocks one month later. Kim refused to meet U.S. Secretary of State Mike Pompeo when he visited North Korea in early July, and North Korea accused the American side of having a “gangster-like mindset.” On July 12, North Korean officials didn’t show up at a scheduled meeting at the DMZ to discuss returning the remains of U.S. troops. However, the meeting took place on Sunday, July 15 instead.

What does this mean for the future of United States-North Korea relations? Where will the talks go from here? The National Interest asked nine scholars and experts for their views on the following question:

U.S. Secretary of State Mike Pompeo met with North Korean officials on July 6-7 to further talks between the U.S. and North Korea on denuclearization—talks that seemed to have not gone well. In your judgment, what are the prospects for denuclearization and/or peace, and what should the parties do going forward?

Michael Auslin , Williams-Griffis Fellow in Contemporary Asia at the Hoover Institution:

The Trump administration has committed itself to negotiations until North Korea crosses a line that proves undeniable bad faith, such as more nuclear testing (including a potential atmospheric test), repeated missile launches, unambiguous evidence of proliferation, or a military provocation directed at South Korea, Japan, or the United States. Short of such actions by Pyongyang, it is unlikely that the administration will declare their engagement a failure.

This means that the North Koreans effectively control the pace of relations and have successfully instituted a dynamic that keeps the Americans in a largely reactive mode. While the President and Secretary of State Pompeo repeatedly have cautioned that any denuclearization effort will take a long time, they continue to maintain that progress is being made, for the present, thus relieving the North Koreans of having to actually do anything more than they already have (i.e., release of U.S. hostages, de facto moratorium on missile and nuclear tests, destruction of a nuclear test site).

If the Administration believes there is a realistic chance of beginning a process of serious negotiations, then it will have to get Pyongyang to commit as soon as possible, thereby putting the North Koreans in the position of failing to live up to their promise. One leverage point may be the Singapore joint statement, as vague as it was, signed by Kim Jong-un, and the administration may have to directly call out Kim and lay future failure at his doorstep. Moreover, the administration needs to try to figure out what role China is playing in encouraging North Korea's on again-off again antics. Through it all, the policy of so-called "maximum pressure" should remain, though the effectiveness of future hardened American rhetoric is probably limited.

Overall, however, the prospects for meaningful negotiations, let alone actual denuclearization, look slim, leaving Pyongyang on the cusp of becoming a legitimate nuclear power. While it is possible that the North will come to the table for a real deal (which would require major concessions on Washington's part), it increasingly appears likely that the North will engage in diversionary tactics or make only limited agreements.

If Trump fails now with Kim, future U.S. presidents may well eschew any type of negotiations. Even if talks fail, Kim may feel that Singapore legitimized him as a world leader and may believe that there is no risk in returning to the status quo ante and alienating the Americans, perhaps permanently.

John Feffer , Co-director of Foreign Policy in Focus at the Institute for Policy Studies:

The Trump administration wants North Korea to give up its nuclear weapons by 2020 after which it would get sanctions relief. Pyongyang insists on a phased and synchronized approach with incentives and concessions along the way. On paper, these are not entirely incompatible approaches.

In reality, however, nuclear weapons occupy too important a place in North Korea's national security – as deterrent against attack, as bargaining chip, as shortcut to achieving strategic balance on the Korean peninsula – to be given up easily. Meanwhile, the U.S. foreign policy establishment is skeptical of any process that rewards North Korea for actions short of complete, verifiable, and irreversible denuclearization (CVID).

The most likely post-Singapore scenario, then, is a protracted set of negotiations over the very terms of negotiations. The first (unsuccessful) step in this process took place in early July with

Pompeo's visit to Pyongyang. If both sides can agree on terms, however, some hesitant moves toward denuclearization can follow.

Meanwhile, as Washington and Pyongyang negotiate their differences, the two Koreas can use this extended pause in hostilities to restart the slow-motion reunification of the Kim Dae-jung and Roh Moo-hyun years. That means a resumption of direct links (hotline between capitals, direct marine radio communication), joint economic projects (tourism, Kaesong Industrial Zone), infrastructure coordination (inter-Korean rail), NGO initiatives (reforestation), and cultural exchanges.

The two sides are potentially going further. On the table are such proposals as pulling back long-range artillery pieces from the DMZ and establishing a Pyongyang bureau for the South Korean news agency Yonhap.

Inter-Korean reconciliation depends at least in part on an ongoing détente between Washington and Pyongyang. That détente in turn requires at least the promise of denuclearization. As long as the United States and North Korea keep talking, the two Koreas can get on with the business of creating a more durable peace on the ground.

Nuclear disarmament is an important goal. But denuclearization was not one of the demands the United States made of China during the détente of the 1970s. Détente, however, ensured that China, once embedded in the international system and the global economy, would be considerably less likely to use nuclear weapons.

Ultimately, that should be the U.S. goal with North Korea as well. CVID may well be a chimera. But Washington and Seoul can engage Pyongyang in ways that make it less likely to use any of its weapons.

Kim Sung-han, Professor, Korea University; former Vice Minister of Foreign Affairs and Trade for South Korea (2012-2013):

There was both good news and bad coming out of Secretary Pompeo's visit to Pyongyang. First, the bad: Pompeo was unable to win North Korean acceptance of Final, Fully Verified Denuclearization (FFVD). Next, the good: He refused to accept North Korea's demands for an official End of the War Declaration before North Korea shows significant progress in denuclearization.

Overall, North Korea is likely to drag its feet by relying on salami slicing tactics—separating the bilateral agenda into smaller pieces and maximizing its benefits for each concession—unless the United States can draw genuine support from South Korea and China. North Korea could try to dismantle ICBMs if it sees President Trump getting impatient as he approaches the mid-term elections, thereby driving a wedge between the United States on the one hand and South Korea and Japan, on the other, who are more concerned about short-to-mid-range missiles than they are about ICBMs.

In this vein, the United States and South Korea, in particular, need to try utmost efforts to agree on a detailed roadmap for FFVD and persuade China to get on board so that Beijing will delink the North Korean nuclear issue from the structure of U.S.-China strategic competition. The core of the roadmap is the strategic framework to exchange FFVD with the peace regime of the Korean Peninsula, not just a peace treaty (or End of War Declaration) alone. The peace regime should be defined as a comprehensive concept which includes denuclearization, U.S.-North Korea and Japan-North Korea diplomatic normalization, economic normalization, arms reduction, and a peace treaty.

In light of North Korea's long-time position, North Korea will likely try to focus on the withdrawal of U.S. troops and the U.S.-North Korea peace treaty in exchange for denuclearization. In this sense, a premature declaration of the end of the war should be avoided since it could provoke unnecessary

controversies over its political and legal impacts on the U.S. Forces Korea (USFK) and the ROK-U.S. alliance let alone the United Nations Command.

If North Korea agrees, the four parties, which include the two Koreas, the United States, and China, should start talking about the establishment of the peace regime on the Korean Peninsula. If the End of the War Declaration is agreed to be inevitable, however, it needs to be done only when North Korea agrees to a specific timeline and roadmap for complete denuclearization.

Bruce Klingner , Senior Research Fellow for Northeast Asia at the Heritage Foundation:

A month after the Trump-Kim summit in Singapore, euphoric U.S. claims that “there is no longer a nuclear threat from North Korea” are running into North Korean intransigence. The sparse Singapore Communique was a shaky foundation upon which to build a comprehensive agreement to compel Pyongyang to abandon its nuclear, missile, and BCW programs.

Secretary of State Mike Pompeo’s post-summit mission to Pyongyang was to put meat on the bare bones summit agreement. His trip was a critical test of how much the two leaders had actually agreed to. Pompeo needed North Korea to affirm—publicly and unambiguously—that it would abandon its WMD arsenals in an expeditious manner. Such a declaration would combat mounting skepticism, which had been fueled by evidence that the regime was expanding its nuclear and missile programs.

Pompeo asserted that he’d made progress, only to see Pyongyang unleash a lengthy and vitriolic rebuke within hours. The regime categorically rejected Trump administration proposals, accused Washington of violating the spirit of the Singapore summit, and threatened to retract its denuclearization pledge.

It is clear that the U.S. and North Korea remain far apart over even the definition of “denuclearization,” let alone the sequencing, linkages, and timeline for achieving it. North Korea’s insistence on addressing its security concerns prior to implementing denuclearization runs counter to U.S. policy and statements by senior Trump administration officials.

As a prelude to a formal peace treaty, Pyongyang is demanding that the U.S. first improve bilateral relations and provide security assurances, including signing a declaration ending the Korean War.

Yet, despite its harsh missive, Pyongyang didn’t totally pull the plug on diplomacy. The regime did, however, express a clear preference for dealing only with President Trump, trying to decouple Pompeo from the process. By praising Trump and criticizing Pompeo, Kim Jong-un seeks to distinguish support for the president from his unwillingness to implement the agreement they reached in Singapore.

The diplomatic path with Pyongyang remains open, but it will be far longer and bumpier than has been depicted by the Trump administration. The U.S. should maintain maximum pressure until Pyongyang makes significant, tangible steps toward denuclearization. Washington must also continue to confront the regime on its human rights violations.

Jean H. Lee , Director of the Hyundai Motor-Korea Foundation Center for Korean History and Public Policy at the Woodrow Wilson Center:

It’s no surprise that North Korea is playing hardball now. Giving up its prized nuclear program is not something North Korea will do without getting everything it can — security assurances, diplomatic and financial concessions — in return. That price will be high, perhaps forcing the United States and South Korea to settle for something less than “complete denuclearization” in exchange for peace.

The North Koreans are tough negotiators, and entirely transactional. They will demand concessions every step of the way. They will remind the Americans of gestures offered so far — the release of the three American detainees, the blowing up of tunnels at a northern nuclear site, and the reported offer to destroy a missile launch pad — and demand action from Washington in return.

Though the Singapore summit was a huge moment for Kim, in building his stature abroad as well as cementing his legitimacy at home, he did not get everything he wanted at that meeting. The North Koreans are conveying their displeasure by giving Secretary of State Pompeo the cold shoulder. They will use this stalling technique to pressure the Americans to concede. We'll also see both sides invoking the promises their two leaders made at the Singapore summit to try to pressure the negotiating teams to escalate the issue to the top level again.

This is the start of a very long series of negotiations between the United States and North Korea. The negotiations will have their ups and downs. Secretary of State Pompeo and his team of negotiators will need to be patient, smart and inventive in dealing with their North Korean counterparts, and assume that the North Koreans are tough, savvy and skillful. There's no need to panic quiet yet — obstacles need to be handled calmly as a matter of diplomacy — but the Americans will need remain skeptical as well as skillful if want to find a lasting path toward peace with the North Koreans.

Vipin Narang, Associate Professor of Political Science at the Massachusetts Institute of Technology:

After Secretary Pompeo's trip to Pyongyang, Kim Jong-un made it abundantly clear that he will not unilaterally surrender his nuclear weapons. This should not come as a surprise to anyone, because he has never offered to unilaterally surrender his nuclear weapons. Not once.

The Singapore Declaration clearly sets forth a sequence where, only after trust has been built and a peace regime established between the United States and DPRK, will North Korea "work toward the denuclearization of the Korean Peninsula." President Trump and Secretary Pompeo triumphantly declared that this meant that North Korea would "denuke" or that it meant Chairman Kim agreed to the "final, fully verified denuclearization of the DPRK." It does not.

And after Pompeo's visit, the North Koreans were not going to allow him to paper over these differences anymore, since they are more than semantic. For North Korea, demanding that it surrender its nuclear weapons without first working toward a peace regime and building trust in a phased manner—which presumably includes some sanctions relief—is tantamount to "robber like" behavior, and they are clearly stating: stop saying we agreed to unilaterally disarm, and stop asking for it, because it's not going to happen.

Does that mean the process is dead in the water? Not at all. It is a classic North Korean strategy to fire back like this, and also to run out the clock on meetings, which it sounds like they did by stonewalling even on commitments that the Trump administration believed were secured: return of remains and destruction of presumably the Sohae engine test site.

The North Koreans signaled several things going forward. First, they are willing to discuss things short of unilateral disarmament, but it will cost the US a lot and it will burn a lot of clock, so be prepared for a long slog. For example, in a section that received little attention, North Korea linked the destruction of Sohae—for the first time in an official statement—with a suspension of ICBM production (not just flight tests). That does not mean they will freeze ICBM production immediately, and it could be word-play, but it is not nothing and is worth pushing on.

Second, they appealed to Trump directly to rein in the "headwinds" that are slowing down trust-building and a peace regime, which was a signal to stop opening up with unilateral disarmament as a prerequisite to peace talks. They suggested the process was in critical condition, but it was not dead.

It now remains to be seen how the administration will react to North Korea's tactics. The President might believe he was betrayed by Kim, despite Kim having never actually agreed to unilaterally disarm, as Trump believes. This might lead to heightened tension on the Korean Peninsula such as a resumption of exercises and missile testing if talks fall apart. Alternatively, the President might live in denial about North Korea's nuclear weapons, wanting to chalk up Singapore as a win and willfully overlooking evidence that North Korea is not only not disarming, but continuing and possibly expanding nuclear production. That avoids direct conflict, but does little to help cap what could potentially be a monster of a nuclear weapons arsenal.

The best outcome would be continued engagement on issues of overlapping interest but abandoning the demand for unilateral disarmament up front and kicking that can down the road. There are meaningful objectives—such as declaration of facilities and freezing production—that can still be achieved, but they will require a lot of patience and a lot of long meals in Pyongyang.

Ankit Panda , Adjunct Senior Fellow in the Defense Posture Project at the Federation of American Scientists:

Secretary of State Mike Pompeo's trip to Pyongyang did not go well. Though the United States and North Korea have set up a working group-level process to see through the implementation of the June 12 Singapore declaration signed by President Trump and North Korean leader Kim Jong Un, it appears that the U.S. side has a considerably different interpretation of what the document says compared to the North Koreans.

Before going to Pyongyang, State Department spokesperson Heather Nauert outlined that Pompeo would be seeking the "final, fully verified denuclearization of North Korea, as agreed by Chariman Kim in Singapore." There's just one problem with that: that's not what Kim agreed to in Singapore and there's a document with his name on it to prove it. North Korea signed on to work "towards the complete denuclearization of the Korean Peninsula."

Pompeo should know this, but he chose to make unilateral North Korean disarmament the objective in Pyongyang. This was why the North Korean Foreign Ministry pushed back in the aftermath of his trip, telling the secretary to leave demands for unilateral denuclearization at the door if he wants to set up a productive diplomatic process.

The future of the current round of U.S.-North Korea talks will depend primarily on whether the U.S. is willing to come back to the table with North Korea having read the Singapore declaration for what it is. If that doesn't happen soon, this process might collapse like so many before it.

Joshua Stanton , OneFreeKorea founder and editor and fellow at the Institute for Corean-American Studies:

After a promising start, Donald Trump now risks throwing away our last chance to resolve the North Korea nuclear crisis peacefully. No, sanctions had not yet brought North Korea to an economic crisis, but they did present Kim Jong-un with that inevitability through a methodical cutoff of his banking, diplomatic, and trade relationships. Even more threatening were signs that Kim was losing the support of the ruling oligarchy. Defections of diplomats, soldiers, and elite workers surged in 2016, after a multi-year campaign to seal North Korea's borders had reduced defections by more than half. Donald Trump's speech in Seoul--arguably the best of his presidency--and his recognition of a North Korean defector in his 2018 State of the Union speech, threatened to strike at both of Kim Jong-un's principal vulnerabilities--his dependency on external finance, and the latent unpopularity of his repressive regime.

Trump's Singapore summit made great theater, but terrible policy. To get his photo op with a man responsible for large-scale crimes against humanity, Trump cancelled a round of sanctions designations designed to attack the funding sources for Kim's WMD proliferation. He has

announced no new sanctions since. Each day sanctions are not enforced, more of the financial ecosystem's low characters decide that laundering Pyongyang's money is worth the risk. The pressure sanctions exert is perishable, and even under the best circumstances, they need time to work. Even before Singapore, it was in doubt that they could work before Kim Jong-un proved his ability to destroy an American city. Trump may have thrown away our last chance to stop him, even as Kim speeds up its development of nuclear weapons and ballistic missiles.

Some now counsel us to coexist with a nuclear North Korea. Yet already, Pyongyang asserts its nuclear hegemony over a submissive government in Seoul. As Pyongyang calls for a U.S. withdrawal, Seoul erodes it by trimming away at missile defenses and welcoming Trump's suspension of joint exercises. But fundamentally, the U.S. cannot coexist with any regime that proliferates nuclear and chemical weapons technology, sends assassination and kidnapping squads abroad, uses nerve agents to commit murder in crowded airport terminals, or wages cyberwarfare against our own freedom of expression. Today's capitulation to Pyongyang puts us on a path to tomorrow's war. So let Trump pretend his negotiation remains viable if he must. What is imperative is that he keep the financial pressure on.

Zhu Feng , Director of the Institute of International Relations at Nanjing University:

U.S. Secretary of State Mike Pompeo's visit to Pyongyang on July 6-7 is the latest example to show that Kim Jong-un is "not ready yet" to dismantle nuclear weapons. The sharp discrepancy between the two sides in their comments and their viewpoints on conditions is not unexpected at all as North Korea obviously prefers to take denuclearization as a long game to trade for what it wants, such as diplomatic normalization, a security guarantee, lifting of sanctions and financial remedies.

In fact, the Trump-Kim summit meeting at Singapore and their joint statement failed to precisely elaborate on under what conditions and in what order denuclearization could be achieved. In other words, should North Korea's denuclearization acts precede diplomatic normalization, or should security guarantees from the U.S. come first? More importantly, the Singapore summit did not result in any agreements on a definition of denuclearization.

President Trump must be feeling bitter from his interactions with his counterpart Kim Jung-un. Contrary to his comments, it appears that Pyongyang hasn't genuinely changed its mindset of holding nuclear weapons while seeking gains by dangling verbal pledges of giving up its nuclear weapons. It's replaying old tricks we have witnessed more than two decades.

The international community now is at the crossroads on how to act on denuclearization of North Korea. One option is that we can retreat from current diplomatic détente and return to "maximum pressure" and military intimidation. The other option is to maintain diplomatic engagement until the Kim Jong-un regime is almost ready to change its reclusive country as well as changing its nuclear policy.

This definitely means a significant makeover of denuclearization objectives – putting time-lined benchmarks towards denuclearization behind and turning to continuous contact with North Korea and striving to pull North Korea out of its reclusiveness firmly and gradually. Thereby, denuclearization could be insured after real change has taken place with North Korea. Presumably, denuclearization is an outcome of sequential changes with North Korea rather than the precondition which will frame up our policy input. But my question is this: Can this second option conceivably win international consent?

<https://nationalinterest.org/blog/buzz/north-korea-we-asked-9-worlds-leading-experts-what-happens-next-26111>

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Phys.org (Isle of Man, Europe)

Japan's Growing Plutonium Stockpile Fuels Fears

By Shingo Ito

July 17, 2018

Japan has amassed enough plutonium to make 6,000 atomic bombs as part of a programme to fuel its nuclear plants, but concern is growing that the stockpile is vulnerable to terrorists and natural disasters.

Japan has long been the world's only non-nuclear-armed country with a programme to reprocess spent nuclear fuel from its power plants into plutonium.

On Tuesday a decades-old deal with the United States which allows Japan to reprocess plutonium was renewed, but the pact can be terminated by either side with just six months' notice.

Plutonium reprocessing is meant to create a new and emissions-free fuel source for resource-poor Japan, but the size of its stockpile has started to attract criticism, even from allies.

Plutonium can be used to create nuclear weapons. Although Japan has vowed the material would never be used for military purposes, it has now amassed vastly more plutonium than it can use, since many of its nuclear plants are still offline after the 2011 Fukushima disaster.

Experts warn the growing stockpile could be dangerous in case of a natural disaster, like the earthquake and tsunami that set off the Fukushima meltdown, and is also an attractive target for terrorists.

They also fear the reserve could encourage other regional powers, including China, to press for a similar reprocessing capability, boosting the amount of weaponisable plutonium in Asia.

And some even warn that North Korea could point to the stockpile as an excuse to avoid denuclearising.

This month Japan's government vowed for the first time to "tackle a reduction in plutonium stocks" but gave no roadmap.

The country's Atomic Energy Commission reportedly plans a self-imposed cap on the reserve, which now stands at 10 tonnes inside the country, with another 37 tonnes in Britain and France for reprocessing.

Costly and complicated

"Promising to stop increasing the stockpile is the least they should commit to," said Tatsujiro Suzuki, former vice chairman of the commission.

"What they really need to do is set a clear goal for reduction," Suzuki told AFP.

"It's time for Japan to fully review its nuclear recycling programme."

The stockpile has attracted concern in the wake of the Fukushima nuclear disaster, which forced the shutdown of all of the country's nuclear plants.

Only some have resumed operations, and their fuel requirements fall far short of the stockpile Japan has already amassed.

Despite that, the government has continued work on a decades-long multi-billion dollar project to build a new reprocessing plant, using French and local technology.

Most reprocessing is currently done overseas, mainly in France, and Japan has struggled with technical problems at the new facility.

The planned reprocessing plant, in Aomori in northern Japan, has so far cost around \$27 billion, but the technical problems mean there is no sign of an opening date despite decades of work.

Experts say reprocessing plutonium into fuel is up to ten times as expensive as producing uranium dioxide fuel.

"Japan's plutonium separation is very costly and has no economic or environmental benefit," said Frank von Hippel, a Princeton University professor who researches nuclear arms control and policymaking.

Regional race

Tokyo's reprocessing programme also runs the risk of sparking a regional race, warned Thomas Countryman, a former US State Department official for arms control and non-proliferation.

"In the region, it is not in the interest of the United States or Japan or the world to see South Korea or China imitate Japan and enter the field of civilian reprocessing," he told Japanese lawmakers last month.

"This would increase the risk to nuclear security, that is, the risk terrorists or criminals might divert plutonium, and it would increase regional competition in a technology that offers more risks than it does benefits," he added.

China is already pushing for its own reprocessing capacity with the help of French and Russian partners, while South Korea has been researching reprocessing technologies but faces objections from environmentalists.

Japan, the only nation in the world to have suffered an atomic bomb attack, insists it would never use its plutonium for military purposes.

The reserves are subject to monitoring by the International Atomic Energy Agency, which has not raised public concerns about the stocks.

But some activists fear Japan views the stockpile as a way of keeping its options open on nuclear weapons.

"Japan appears to be caught up in the idea that in an emergency it can produce nuclear weapons with its reprocessing technology," said Hideyuki Ban, co-director of the Citizens' Nuclear Information Centre, an anti-nuclear NGO.

<https://phys.org/news/2018-07-japan-plutonium-stockpile-fuels.html>

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Breaking Defense (Washington, D.C.)

Inside America's Aging Nuclear Missile Submarines

By Sydney J. Freedberg Jr.

July 16, 2018

America's nuclear deterrent is aging, with a half-dozen replacement programs on the horizon. But the young men and women who serve, Gen. John Hyten said, are better than ever: "They love this country. They want to defend this country. They go to work every day. They're amazing — they're smarter than we were, by far. They get motivated differently so you have to lead them differently, but their passion is just the same."

KING'S BAY, GEORGIA: Imagine drifting off to sleep underwater in a tiny room with eight other people, with nuclear missile tubes on either side.

Need a drink now? Too bad, because, while in theory the skipper can authorize alcohol, in practice he never will. You can eat canned asparagus every day though, if you want, thanks to a quirk in Navy nutrition regulations. (It's unclear how much of it ends up compacted into cubes with the other garbage, weighted down, and dumped to the ocean floor). Oh, and as another health benefit, even though you live next to a mobile nuclear reactor, you get less radiation than the average American simply because you spend months at a time without seeing the sun.

Sounds less than homey? Well, apparently, you get used to it. That's according to the crew of the ballistic missile submarine USS Tennessee (SSBN-734), homeported here in King's Bay and currently tied up pierside for a refit.

There's an armed sailor in body armor standing guard on deck, plus trained dolphins and sea lions on watch for hostile divers. (Yes, really). When I and other attendees at a nuclear security conference here (courtesy of the DC-base Mitchell Institute and the local Camden Partnership) got the rare opportunity to tour a boomer, we had to leave our cellphones, cameras, and all other electronics behind before we boarded the Navy bus, which had been swept by security personnel and dogs. Even so, they never let us near the sub's reactor — but the front end of the boat was intriguing enough.

Inside the sub, the already cramped passageways were cluttered with temporary tubing. Every flat surface seemed covered by machinery being meticulously disassembled by several sailors, often standing with their backs nonchalantly to the two rows of 12 sequoia-thick silos that dominate the hull. The crew had even installed a temporary spiral staircase in their largest hatch to help them hustle in and out of the boat with supplies and spare parts. (Normally there're no stairs aboard a sub, just ladders).

Just to turn up the heat a little, literally, the sub's air conditioning had been turned off temporarily earlier in the day, while the boat moved berths. The reactivated A/C was still struggling to purge the July-in-Georgia heat from what is, after all, a big black metal tube with only a few hatches for ventilation. The only cool air aboard was right around the oxygen generator. The generator looks rather like Hell's own espresso machine, but it actually splits ordinary water into oxygen — it's the only thing that keeps the crew from suffocating underway — and hydrogen (vented offboard with the carbon dioxide), which is an endothermic (heat-draining) reaction. But while I was wilting just walking around, the sailors I saw at work seemed undaunted.

Which is busier, I asked one sailor: Being out on patrol, or being in port for a refit? Refit is, he said, "by far." There's a lot of work to do in 35 days at home being heading out to sea for two or three months. Each sub actually has two crews of over 150 each, Blue and Gold, who alternate to ease the

strain on sailors and families. Even so, a career submariner like the skipper of the Tennessee, Commander Paul Seitz, spends an estimated six years of his life underwater.

An Aging & Hard-Worked Force

So nuclear submarines are used hard every year, and this one is 32 years old. In fact, Tennessee was the first SSBN homeported at King's Bay and the first boat to test-fire the Trident D5 missile. The other 13 Ohio-class nuclear missile subs stationed here and in Bangor, Washington were all commissioned between 1981 and 1997, and the US hasn't built another SSBN since. (The newer Seawolf and Virginia submarines are relatively small attack boats that don't carry nuclear missiles). The Navy's now hustling to design and build the \$128 billion replacement program, the Columbia class, with no slack left in the schedule.

Even so, Tennessee and her sisters will have to stay in service 42 years apiece before they can be replaced in the 2030s. The land-based Minuteman ICBM, the B-1 and B-2 bombers, and the Air-Launched Cruise Missile (ALCM) will also need replacements about the same time. The force also needs upgrades to aging nuclear warheads, Trident missiles, and the nuclear command, control, and communications network (NC3), as well as refurbishment of crumbling Energy Department buildings that in some cases date back to the Manhattan project. All that will put tremendous pressure on the Pentagon budget.

"Everything in that program delivers just on time to replace the old stuff," said Gen. John Hyten, the four-star Air Force officer in charge of Strategic Command, to the nuclear weapons conference here.

"Every leg of the triad is up against the red line in terms of recapitalization," agreed Rear Adm. John W. Tammen, director of undersea warfare (N97) on the Navy staff. "The green-eyeshade people...have repeatedly delayed and delayed each of the programs. (Now), the bottom line is there's no additional margin for construction and delivery of Columbia." To reduce the risk, defense contractors have already started building missile tubes — some of which will go to the Royal Navy's SSBN program — as well as a full-up prototype of the new design's electric drive.

Is there any way, I asked, to squeeze some more years out of the Ohios, originally designed to last 30 years? "We have sharpened the pencils to get to 42 years," he said. "I don't think there's anything past 42."

So "we have to get Columbia done on time, (and) we are on plan to do that," Tammen emphasized. "With the current leadership designating the strategic mission as DoD's No. 1 mission, the resources are there."

In the meantime, there's some money to keep upgrading the existing equipment, but very selectively. So, like much of the US military, the sub is a strange mix of cutting-edge and vintage. There are plasma screens on the wall of the galley, the petty officer's "Goat Locker," and the captain's office/stateroom/tiny cell, that display the condition of the sub in real time, all the time once underway.

But a lot of technology dates from the 1980s when the boat was built, including key components of the fire control system for the ballistic missiles. It turns out "clunky but tried and tested" beats "new hotness that's mostly been debugged" when you're working with nuclear weapons. And no, the crew told us, one man can't launch the missiles: It takes at least two people turning keys at once in two different parts of the ship.

Saying "Thank You"

Does the crew suffer any existential dread from living, working, and sleeping next to enough megatonnage to kill millions of people? Apparently not. None of these submarines has ever fired a shot in anger as opposed to testing, and the sailors naturally prefer it that way. The whole point of a

deterrent is, if it's successful, you never have to use it. And while America's land-based silos are visible to orbiting satellites, and its strategic bombers often make high-profile flights abroad to assure allies and unnerve adversaries, the submarines' success lies in never being seen.

So it's easy to overlook the service of US Navy submariners, or for the matter the Air Force missileers who go to work every day in bunkers deep underground, standing ready for the order we all pray will never come. And this weight is on some very young shoulders.

Air Force missileers.

Gen. Hyten recalled how one junior lieutenant, working at Malmstrom missile base in Montana on her first assignment in the Air Force, asked how he responded when people derided the work ethic of millennials.

"What I say is, if you want to see our country, get on my plane and come with me," Hyten said, voice breaking with emotion. "Come with me to Malmstrom, come to me to Kings Bay, and I'll introduce you to the millennials that do the job every day — and you will find that they're exactly the same as they were 20 years ago, exactly the same as they were 40 years ago."

"They love this country. They want to defend this country. They go to work every day," Hyten said. "They're amazing — they're smarter than we were, by far. They get motivated differently so you have to lead them differently, but their passion is just the same."

It was at this point in his answer to the young lieutenant, Hyten said, that he saw a tear start down her cheek. "It's pretty awesome that a missileer whose job is to sit on top of a nuclear weapon, a Minuteman III, takes her job that seriously," he said. "Just saying thank you means a lot."

<https://breakingdefense.com/2018/07/inside-americas-aging-nuclear-missile-submarines/>

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US COUNTER-WMD

U.S. Army (Washington, D.C.)

Demand for Army's Space and Missile Defense Capabilities Continues to Grow

By Lira Frye

July 11, 2018

HUNTSVILLE, Ala. -- The demand for space and missile defense capabilities continues to grow in response to the complex array of challenges to our nation from foreign adversaries, said the U.S. Army Space and Missile Command/Army Forces Strategic Command's senior civilian leader.

James Johnson, USASMDC/ARSTRAT's deputy to the commander, discussed the increasingly complex threat environment during the AUSA Missile Symposium in Huntsville, July 10.

"Over the next 10 years we'll no doubt expand the list of threat systems and capabilities we'll need to defend against," he said. "We have to sharpen our technical edge and ensure our lethality overmatch."

Supporting those overmatch efforts, Johnson said SMDC provides critical technologies to address future needs that will enhance warfighter effectiveness. Technologies like the command's high energy laser effort, microsatellite development and threat-representative low cost targets are key projects supporting Army modernization.

"We must remain bold and innovative, offering solutions to ensure our nation's forces are prepared to fight across multiple domains," Johnson said.

Highlighting preparedness, Johnson pointed out that SMDC provides trained and ready missile defense forces and capabilities to the global combatant commands.

SMDC Soldiers serving in the United States and in remote and austere forward-deployed locations operate the Ground-based Midcourse Defense system, the Army-Navy/Transportable Radar Surveillance Forward-Based Mode radars, and the Joint Tactical Ground Stations.

Part of preparing trained and ready missile defense forces includes providing relevant and updated training to those Soldiers operating global missile defense systems. The rigor of the command's missile defense courses earned SMDC recertification as an Army Learning Institute of Excellence, Johnson said.

As a recognized Army Center for Analysis, SMDC conducts studies to determine how to best meet the Army's assigned missile defense responsibilities. The command's analyses support the processes the Army uses to document its missile defense modernization needs, and pursue joint and Army validation of its requirements.

Modernization takes money, Johnson told attendees. "We have seen vast improvement with the FY18 budget, with a 100 percent increase for air and missile defense from FY17 to FY18, going from \$1.7B to \$3.6B."

"That's a great move toward what we need," he said. "Sufficient and stable funding to support growth to meet the demand, and a high state of readiness in air and missile defense."

The United States' competitors and adversaries will never stop fielding new types of weapons, Johnson said. "Together we are engaged and poised to respond to the needs of today's forces, to anticipate the future, and to ensure the U.S. Army remains the most dominant land power in the world."

https://www.army.mil/article/208398/demand_for_armys_space_and_missile_defense_capabilities_continues_to_grow

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Romania-Insider.com (Bucharest, Romania)

Putin-Trump Meeting Touches on American Antimissile Defense System

Author Not Attributed

July 17, 2018

The US global anti-missile defense system came up in the talks between Russian president Vladimir Putin and his US counterpart Donald Trump, held in Helsinki on July 16.

The anti-missile system also includes components that are hosted in Romania, at the Deveselu military base, in the southwestern part of the country.

While speaking of the responsibility for maintaining international security and of the shared work concerning the disarmament agenda, the Russian president mentioned the global American anti-missile defense system.

"We believe it necessary to work together further to interact on the disarmament agenda, military, and technical cooperation. This includes the extension of the Strategic Offensive Arms Limitation

Treaty. It's a dangerous situation with the global American anti-missile defense system; it's the implementation issues with the INF treaty; and, of course, the agenda of non-placement of weapons in space," Putin said at the news conference following the meeting, quoted by CNN.

Russia has criticized before the anti-missile systems set up in Romania and Poland within the NATO framework. In 2017, it labeled Romania a "clear threat" to its security, and as a NATO outpost, due to the fact that the country hosts elements of a U.S. anti-missile system.

The antimissile defense system Aegis Ashore at Deveselu became operational in 2016. It has been designed as a defense system against attacks from outside Europe, such as potential ones from Iran.

<https://www.romania-insider.com/putin-trump-antimissile-defense-system/>

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The New York Times (New York, N.Y.)

Drug to Treat Smallpox Approved by F.D.A., a Move against Bioterrorism

By Donald G. McNeil Jr.

July 13, 2018

The Food and Drug Administration on Friday approved the first drug intended to treat smallpox — a move that could halt a lethal pandemic if the virus were to be released as a terrorist bioweapon or through a laboratory accident.

The antiviral pill, tecovirimat, also known as Tpoxx, has never been tested in humans with smallpox because the disease was declared eradicated in 1980, three years after the last known case.

But it was very effective at protecting animals deliberately infected with monkeypox and rabbitpox, two related diseases that can be lethal. It also caused no severe side effects when safety-tested in 359 healthy human volunteers, the F.D.A. said.

"This new treatment affords us an additional option should smallpox ever be used as a bioweapon," said Dr. Scott Gottlieb, the F.D.A.'s commissioner.

Having a drug that usually cures smallpox is an important medical breakthrough, according to several medical experts not associated with the F.D.A. or the company making the drug.

F.D.A. approval is "definitely a good thing," said Dr. Anthony S. Fauci, director of the National Institute of Allergy and Infectious Diseases.

Research on tecovirimat — originally designated ST-246 — began at the institute after the 9/11 terrorist attack on the World Trade Center, Dr. Fauci said. The research accompanied efforts to stretch the national stockpile of smallpox vaccine by safely diluting it.

"It all started back then, but developing a licensed product took until today," he added.

The F.D.A. approval of the drug went to Siga Technologies of Corvallis, Ore., a private company that developed the medicine under a federal biomedical defense contract.

Although circulating smallpox has been eradicated, two known stores of the virus exist in laboratory freezers — one in Russia and one at the Centers for Disease Control and Prevention in Atlanta.

Bioterrorism experts fear that other stocks may exist; for example, in 2014 several forgotten vials containing smallpox were found at the National Institutes of Health.

More worrisome, experts say, is the possibility that a terrorist lab or even a sophisticated amateur could use modern gene-editing techniques to rebuild the virus and then unleash it, deliberately or accidentally, on an unprepared world.

Because routine smallpox vaccination stopped after 1980, almost everyone under the age of 40 is unprotected. The disease kills almost a third of people who get it, and is even more lethal to babies.

Finding a medicine was vital because — unlike, for example, measles or whooping cough vaccine — smallpox vaccine is too dangerous to give everyone, said Dr. Peter J. Hotez, former president of the Sabin Vaccine Institute and dean of the National School of Tropical Medicine at Baylor College of Medicine.

The vaccine is now routinely given only to some members of the military, lab workers and others likely to come in contact with the virus in a bioterrorism event. It cannot be given to pregnant women, or to anyone with H.I.V., under cancer treatment or with any other immunosuppressive condition; nor can the vaccine be given to anyone with eczema or several other skin diseases, Dr. Hotez said.

So a medicine like tecovirimat would be useful for treating anyone infected in the first wave of any release of the virus, as well as the millions of Americans who cannot be vaccinated.

Dr. William Schaffner, a professor of preventive medicine at Vanderbilt University Medical School, noted tecovirimat also could be useful for treating monkeypox, which infects humans and has been increasing rapidly in Africa since smallpox vaccination ended.

Monkeypox sometimes travels internationally; in 2003, there was an outbreak of 47 confirmed and suspected cases in the United States. According to the C.D.C., the virus arrived in a shipment of 800 small mammals from Ghana, including African giant pouched rats and rope squirrels intended for the pet trade. They infected prairie dogs at an Illinois pet warehouse; the prairie dogs in turn infected children who bought them as pets.

Despite its fearsome reputation, smallpox actually spreads slowly compared with more common diseases like measles or chickenpox, Dr. Schaffner said.

Symptoms like fever, exhaustion and headache typically begin 10 to 14 days after infection. These are followed by a rash of small bumps that become pus-filled sores, which can cause permanent scarring.

In severe cases, the infection causes loss of large areas of skin and bleeding. The virus can also reach the brain, leading to encephalitis, and can cause blindness by blistering the eyeballs.

When tecovirimat was tested in humans, the most common side effects it caused were headache, nausea and abdominal pain, the F.D.A. said.

Results of testing by Siga Technologies were published in the New England Journal of Medicine on July 5.

The F.D.A. gave Siga several valuable incentives toward its application for approval, including fast-track and priority review designations.

<https://www.nytimes.com/2018/07/13/health/smallpox-drug-fda-bioterrorism.html>

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US ARMS CONTROL

The New York Times (New York, N.Y.)

Iran Takes U.S. to Court over Nuclear Deal and Reimposed Sanctions

By Rick Gladstone

July 17, 2018

Iran has sued the United States at the International Court of Justice in a new, if dubious, strategy to nullify the nuclear sanctions reimposed by President Trump, which are starting to inflict pain on Iran's already troubled economy.

The International Court of Justice, the principal judicial organ of the United Nations, said in a statement on Tuesday that the lawsuit was based on a treaty signed by Iran and the United States more than a half-century ago — well before the 1979 Islamic Revolution that overthrew the American-backed shah and ushered in the prolonged estrangement in relations between the countries.

The United States vowed to fight what it called a “baseless” lawsuit.

Mr. Trump ordered the nuclear sanctions reimposed on May 8 as part of an announcement withdrawing his government from the 2015 nuclear agreement negotiated by Iran and major powers, including the United States, under the Obama administration.

Mr. Trump has assailed that agreement, which lifted the sanctions in return for Iran's verifiable pledges to use nuclear power peacefully, as “the worst deal,” despite support for it by the other participants, including Britain, France and Germany, major American allies.

The International Atomic Energy Agency, the anti-proliferation monitor of the United Nations, has repeatedly said the nuclear agreement is working.

But the accord's future is in grave doubt over the Trump administration's decision to abandon it. Iranian officials have said they are preparing to renounce the accord if European participants cannot find a solution.

“We are, of course, continuing to carry out and implement our obligations,” a spokesman for Iran's Atomic Energy Organization, Behrouz Kamalvandi, told reporters in Tehran. “but at the same time, taking every scenario into consideration, we are preparing ourselves.”

The Iranian lawsuit was filed Monday and asked the International Court of Justice, which is based in The Hague, to order the United States to “terminate the 8 May sanctions without delay.”

The lawsuit also demanded that the United States compensate Iran for financial damage already done by the reimposed sanctions. An amount was not specified.

The State Department said in a statement that it was aware of Iran's lawsuit. “Iran's application is baseless, and we intend to vigorously defend the United States before the I.C.J.,” the department said.

It was not immediately clear why Iran chose to invoke the Treaty of Amity, Economic Relations and Consular Rights between Iran and the United States, signed in Tehran in 1955, as the basis for such a lawsuit. The Iranians did not cite that treaty in attempts to stop the nuclear sanctions when they were first imposed.

A date for a hearing on Iran's complaint was not announced by the court. Although the court's decisions are binding, it has no power to enforce them.

Foreign Minister Mohammed Javad Zarif of Iran, who was a principal negotiator of the nuclear agreement, said on his Twitter account that the lawsuit reflected Iran's commitment to "the rule of law in the face of U.S. contempt for diplomacy & legal obligations."

But experts who specialize in sanctions-related laws said the merits of the Iranian lawsuit might be weak, partly because of what they called Iran's own transgressions of the 1955 treaty.

"The move appears largely symbolic and for largely domestic consumption," said Farhad R. Alavi, managing partner of the Akrisis Law Group in Washington. "Even a ruling or declaration in favor of Iran, however unlikely, would have very limited impact on the realities on the ground."

In reimposing the sanctions, the Trump administration has warned other countries that they risk American penalties if they continue to do business with Iran, including purchases of oil, Iran's most important export.

The administration has rejected pleas for exceptions from the reimposed sanctions sought by major international companies. Multibillion-dollar deals envisioned with Western firms have been abandoned or delayed.

President Hassan Rouhani of Iran, whose support for the nuclear agreement was his signature campaign issue, said on Saturday that Mr. Trump's decision to abandon the accord and reimpose sanctions had left the United States more isolated.

But fears of the economic impact already have done major damage in Iran. The value of Iran's currency has plummeted over the past few months, and economic protests have increased, including by merchants in Tehran.

<https://www.nytimes.com/2018/07/17/world/middleeast/iran-sues-us-over-sanctions.html>

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UPI (Washington, D.C.)

Russia Open to Extending Nuclear Arms Treaty with U.S.

By Danielle Haynes

July 17, 2018

The Russian Defense Ministry on Tuesday said it wants to increase cooperation with the United States to extend a nuclear arms treaty set to expire in 2021.

Ministry spokesman Igor Konashenkov told state-run Russian news agency Tass his country wants to extend the New Strategic Arms Reduction Treaty -- or New START. U.S. President Barack Obama and Russian President Dmitry Medvedev signed the agreement in April 2010, which reduced the nuclear weapons each country will deploy and included a verification regime.

"The Russian Defense Ministry is ready to enliven contact with the U.S. colleagues, between our general staffs and via other communication channels, to discuss extension of the START Treaty, cooperation in Syria and other topical issues of military security," Konashenkov said Tuesday.

Russian President Vladimir Putin told Fox News on Monday he expressed this desire during his Helsinki meeting with President Donald Trump.

"I reassured President Trump that Russia stands ready to extend this treaty, to prolong it, but we have to agree on the specifics at first because we have some questions to our American partners," he said. "We think that they are not fully compliant with the treaty, but this is for experts to decide."

The New START Treaty calls for each country to cap weapons at 1,500 developed weapons, 700 deployed missiles, and 800 deployed and non-deployed launchers.

During his state of the union address in March, Putin said that despite the treaty, the United States is "permitting constant, uncontrolled growth of the number of anti-ballistic missiles, improving their quality, and creating new missile launching areas."

"If we do not do something, eventually this will result in the complete devaluation of Russia's nuclear potential," he said. "Despite our numerous protests and pleas, the American machine has been set into motion, the conveyor belt is moving forward."

Putin said Russia's response to the challenge presented by the United States is making new models of strategic weapons.

<https://www.upi.com/Russia-open-to-extending-nuclear-arms-treaty-with-US/2071531846834/>

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NPR (Washington, D.C.)

Arms Control Surfaced in Helsinki, But It's Likely Just Talk

By David Welna

July 17, 2018

For all the bad blood between the U.S. and Russia, those two nations still inspect one another's vast nuclear arsenals and both have sharply curtailed the number of nuclear weapons poised to launch. That's thanks to two arms control treaties which are now at risk.

Now, at their Helsinki summit, Presidents Trump and Putin have embraced restarting stalled arms control talks.

Even before the two leaders showed up at their post-talks news conference, arms control was already creating a stir there.

Security guards hauled away a man holding a sign reading "nuclear weapon ban treaty". It was a reference to a UN treaty approved last year that neither the U.S. nor Russia, which together have more than 13,000 nukes, had signed on to.

Putin told reporters that as major nuclear powers, the U.S. and Russia bear what he called "special responsibility for maintaining international security."

"We mentioned this during the negotiations, it's crucial that we fine-tune the dialogue on strategic stability and global security and non-proliferation of weapons of mass destruction," the Russian leader added. "We submitted our American colleagues a note with a number of specific suggestions."

On Putin's wish-list: an extension of the soon-to-expire New START treaty, which he told Fox News that Moscow would be ready to discuss with the U.S.; talks about limiting U.S. missile defense systems, a clear reference to the THAAD batteries installed in Romania and Poland; and issues with the troubled Reagan-era Intermediate Nuclear Forces treaty, which Russia and the U.S. have accused each other of violating.

"It's the usual agenda, and I wouldn't read that much into it," says Olga Oliker, who directs the Russia and Eurasia program at the Center for Strategic and International Studies, "other than the fact that these are things that they actually could have put together into something of a joint statement, because there is enough agreement, even if it's agreement to talk about the disagreements, to have gotten a 'get' out of the summit on these topics. Instead what we have is the Russians passed over a paper with suggestions."

While it was clearly Putin who took the initiative on reviving the stalled arms talks, Trump was eager to chime in.

"Whether it's nuclear proliferation in terms of stopping, we have to do it," he declared at the joint news conference. "Ultimately that's probably the most important thing that we can be working on."

But some who have followed arms control talks with Moscow for decades have doubts about what such presidential expressions of concern might actually produce, despite Putin's proclaimed interest in extending the New START treaty.

"I think that you will not get any arms control agreements out of Helsinki," says Dimitri Simes, president of the Washington-based Center for the National Interest. "Neither side is quite prepared for that."

There are, in fact, few well-known non-proliferation experts who serve in the Trump administration. And White House National Security Adviser John Bolton has a record of staunchly opposing arms control deals.

In Helsinki, Trump put the blame for inaction on arms control on the Justice Department investigation of Russian interference in the election that brought him to power.

"It has had a negative impact upon the relationship of the two largest nuclear powers in the world. We have 90 percent of nuclear power between the two countries," Trump said, apparently referring to the 92 percent share of the world's nuclear weapons held by the U.S. and Russia. "It's ridiculous, it's ridiculous what's going on with the probe."

But with Russia's 2014 invasion of Ukraine and annexation of Crimea still officially condemned and sanctioned by the U.S., it's not clear how much enthusiasm there might be in Washington for a new arms control agreement with Moscow, or even extending the Obama-era New START treaty.

"At the State Department and in other parts of the U.S. government," says CSIS' Oliker, "there is a desire not to reach any agreements with the Russians without some sort of resolution of the Ukraine crisis."

Trump made no public comments in Helsinki about that unresolved crisis.

<https://www.npr.org/2018/07/17/629715244/arms-control-surfaced-in-helsinki-but-its-likely-just-talk>

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COMMENTARY

Proceedings Magazine (Annapolis, Maryland)

Upgrade National Missile Defense

By Peter von Bleichert

July 2018

Policymakers in some countries promote the idea of limited nuclear strikes to force favorable outcomes in a conventional war. Other regimes want nuclear weapons and delivery systems to gain advantage, deter great powers, or simply survive. U.S. policymakers know that the United States fields porous and arguably unreliable antiballistic-missile (ABM) systems and are fettered by this diplomatically and militarily. Such systems are unworthy of the country's economic, military, and political power, and they threaten stability by permitting weaker powers to bluff and intimidate.

While the threat of retaliation—mutually assured destruction—deters most rational actors from contemplating a massive first strike against the United States, irrational actors—including otherwise rational actors who find themselves cornered—may not be deterred. Further, brinksmanship or a failed bluff might lead to small-scale initial strikes, and the lack of reliable defenses could encourage foolhardy enemy decisions.

There are countless potential scenarios that might result in a limited nuclear ballistic-missile strike against the United States. Should deterrence fail and an adversary initiate a limited launch, current national missile defense (NMD) architecture is insufficient to assure interception. This fact makes U.S. foreign policy self-restricted. Therefore, the United States must accelerate upgrading its NMD.

Missile Defense 2.0

Proposed budgets would increase the number of ground-based interceptors (GBI) placed in Alaska and California and expand the ground-based midcourse-defense (GMD) system to cover the east coast. Even with improved intercept capabilities, the United States needs to be able to engage enemy ballistic missiles in all phases of flight to improve overall probability of intercept. This will deter rogue states with limited arsenals and more substantial nuclear powers who might be tempted to launch limited strikes.

It is best to destroy enemy missiles while they are on the ground and being prepared for launch. Currently, the United States possesses an ample variety of tools by which to spot deploying/fueling ballistic missiles, though attacking may not always be feasible, and solid-fueled rockets present a challenge because they do not have a pre-launch fueling cycle. Once an enemy “pushes the button” and launches a missile, however, political penalties associated with interception are reduced.

Boost-Phase Intercept

It is easier to target ballistic missiles in their boost phase. The missiles are hot and relatively slow and have yet to release warheads or decoys. But Navy cruisers and destroyers often cannot operate close enough to potential enemy launch sites and are constrained by geography, international politics, and limited numbers of hulls.

The United States must develop and deploy an air-launched ABM weapon. One candidate could be an upgraded AIM-120 Advanced Medium-Range Air-to-Air Missile with a strap-on ramjet booster for long-distance sprints. The interceptor would be carried by stealth aircraft such as the F-22 Raptor, the F-35 Lightning II, the B-2 Spirit or the proposed B-21 Raider. Future ABM weapons

might include laser weapons on unmanned aircraft. Airborne ABM systems would deploy close to threat centers, such as in Guam, Japan, South Korea, Qatar, and on board aircraft carriers.

Controversial space-based boost-phase interceptors must be considered also. To reduce political fallout from weaponizing space, an ABM satellite could be popped up in a crisis from a ballistic missile submarine or land-based launcher. Regardless of how the country pursues such capability, national missile defense must exploit the vulnerability of enemy ballistic missiles in the boost phase.

Midcourse Intercept

The GMD system and its ground-based interceptors (GBI) are substantial. They represent the culmination of U.S. BMD efforts since President Ronald Reagan's Strategic Defense Initiative, the so-called "Star Wars" program of the 1980s. There are efforts to upgrade the GBI with multiobject kill vehicles and a selective-firing upper stage. Nonetheless, there is one sure way to increase the effectiveness of GMD: nuclearize it.

If GBI carried a fixed or selectable (0.1-1.0 kiloton) low-yield nuclear warhead, each interceptor's efficiency rating would increase, reducing the number of interceptors needed for a target cluster. Most intercept scenarios have detonations just outside the atmosphere and over open water. Though there would be damage and destruction to orbital hardware, and there may be fallout or electromagnetic effects on the ground, such consequences pale in comparison to losing a U.S. city to a thermonuclear explosion.

To provide defense-in-depth, the Aegis Ashore version of the Navy's Aegis Combat System of phased-array radars, fire control directors, computers, and SM-3 interceptors, should be set up in Alaska, California, Guam, Hawaii, Louisiana, Oregon, and Pennsylvania.

Terminal Intercept

Interception during this phase of flight is the last opportunity for a shootdown. Theater High-Altitude Area Defense (THAAD) interceptors must protect Guam, Hawaii, Alaska, and the east and west coast.

The Threat Demands a Credible Response

The United States must be able to defend its cities, people, and critical infrastructure from limited ballistic missile strikes or risk being subject to nuclear coercion. Though defense-in-depth demands a layered approach to National Missile Defense, the country relies too heavily on hit-to-kill midcourse intercept to defend its shores. Ballistic missile defense capabilities are an integral component of deterrence and are as important as robust offensive/retaliatory strategic weapons. Upgrade missile defense now.

<https://www.usni.org/magazines/proceedings/2018-07/upgrade-national-missile-defense>

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Real Clear Defense (Chicago, Illinois)

Air and Missile Defense Integration Needed Now...More Than Ever

By Dave Mann, Dick Gallagher, and Larry Wells

July 16, 2018

"Success no longer goes to the country that develops a new technology first, but rather to the one that better integrates it and adapts its way of fighting...Cultivating a lethal, agile force requires more than just new technologies and posture changes; it depends on the ability of our warfighters and the Department workforce to integrate new capabilities and adapt warfighting approaches. -SECDEF Mattis; 2018 National Military Strategy

The Threat

It has never been more important to integrate our current and future air and missile defense capabilities, especially considering the current global threat environment. Potential adversaries have carefully observed U.S. successes in recent conflicts and seek to exploit perceived gaps and vulnerabilities. Given the cost of fielding large land, air, and maritime formations, many are turning to relatively cheaper and "difficult to defend against" technologies like ballistic missile and cyber capabilities. According to recent testimony by Defense Department officials, global trends indicate ballistic and cruise missiles are becoming more capable due to the proliferation of advanced technologies and countermeasures...resulting in systems with global reach, increasing speed, increasing survivability, and greater accuracy. In fact, many countries are developing ground, sea, and air-launched cruise missiles, with nearly 30 countries also possessing ballistic missile capabilities. In addition, threat actors are leveraging commercially available unmanned aerial systems (UAS) to further complicate the air and missile defense environment. According to Secretary Mattis, "...the 2019 budget funds enhancements to U.S. missile defense capabilities to defend the homeland, our deployed forces, allies, and partners against an increasingly complex ballistic missile threat. In accordance with the soon-to-be-released 2018 Missile Defense Review, this budget requests continued robust support for missile defense capacity and capability to keep pace with advancing threats".

Importance of integration

Although the importance of integration has often been discussed, its impact on missile defense operations cannot be overstated. As discussed above, the threat has not taken a tactical pause, but continues to develop improved air and missile capabilities. With this in mind, one of the overarching attributes of a truly integrated system is the ability to seamlessly process data from multiple sensors and link to the most capable kinetic, and in the future, non-kinetic capabilities. This capability is especially critical given the myriad threats that are expected to expand in complexity and numbers.

Integration also provides redundancy and increased opportunities for engagement, while reducing the impact of system gaps and vulnerabilities (e.g., lack of 360-degree coverage, single points of failure, etc.). Historically, there have always been more assets to defend...than available Air and Missile Defense (AMD) systems. It's fair to say there will never be enough AMD systems to protect all assets but maximizing existing, and future capabilities will significantly expand our defended asset footprint and shot opportunities.

It is also important to recognize integration's impact on potential changes to our current shot doctrine...or engagement procedures. In many cases, decisions regarding shot doctrine are made at the highest levels due to its force protection implications, especially when dealing with existential threats. Integrating C2 nodes, sensors, and weapons in real time, without errors, fully enables a

shoot-assess-shoot shot doctrine—where crews employ one interceptor per threat and then only employ a second when the first is unsuccessful. Therefore, integration expands our inventory and capabilities by reducing the number of interceptors required to prosecute a given threat.

No one disputes the fact that AMD systems are inherently expensive. Currently, AMD expenditures represent the fourth most costly portfolio in the Army's budget. In fact, integration actually reduces the cost-per-intercept by optimizing capabilities while lessening the impact of system limitations on the mission. Finally, no discussion on the importance of integration would be complete without discussing cost-sharing opportunities. The ability to share the resource burden among services and our allies is significant, especially given the cost of technology and competing claimants for these limited resources. Foreign military sales play an important role in upgrading current capabilities while investing in future technologies. Bottom line: the ability to integrate compatible AMD systems fielded by the U.S. and its allies significantly enhance both our readiness and U.S. competitiveness abroad.

Current Efforts

For many years, U.S. AMD forces have been deployed throughout the world. Currently, U.S. and Republic of Korea (ROK) forces operate several U.S.- made BMD platforms to defend against short and medium-range North Korean missiles. South Korea is also scheduled to deploy its own short-range BMD system by the early 2020s. Meanwhile, the Japanese have invested in their own integrated BMD system and are currently partnering with the U.S. on the Standard Missile 3 program. Japan also operates four Aegis BMD ships with plans to build four additional ships and two Aegis Ashore sites by the early 2020s. As our allies continue to improve their BMD capability, it's imperative we integrate Command and Control (C2), sensors and weapons to share information and more importantly, to ensure system compatibility.

Turning to the other side of the world, the U.S. has a long and well-established history of working with allies throughout Europe and the Middle East on ballistic missile challenges. In fact, many of our partners have purchased, or are considering purchasing additional U.S. AMD systems. That said, cyber-protection, the releasability of data, and operating standards continue to present some of the most challenging impediments to full integration. The use of tabletop exercises can serve as an important tool to address these issues cost-effectively by rigorously testing and integrating various sensors, weapons, and C2 systems in simulated environments.

"Our approach to IAMD must be inclusive with our NATO allies and key partners as we face a growing ballistic missile threat from regional adversaries. We need to look at our inter-operability with our allies because we can't do this in Europe correctly without doing it together." -GEN Curtis Scaparrotti in testimony before the House Arms Services Committee, February 2018

To address the challenges of integration and interoperability, many partner nations have undertaken efforts to optimize their current AMD systems. Like the U.S., NATO has publicly stated the objective of ensuring systems are "interoperable, share the same command and control open architecture, and achieve the "any sensor, any shooter" capability. The vision of a fully integrated AMD system with a common picture shared among U.S. and partner nation sensors and shooters is clearly a warfighter's need.

The U.S. Army is currently working with industry to develop an Integrated Air and Missile Defense Battle Command System (IBCS) that provides an "any sensor, best shooter capability," a single integrated air picture, and addresses air and missile threats coming from any direction. Recent efforts have successfully identified, tracked, and destroyed cruise missile surrogates using sensors and interceptors from various systems. The Army anticipates fielding an initial operating capability (IOC) by FY 2022. In fact, Poland recently signed a letter of acceptance to acquire IBCS to integrate

its current and future AMD systems. IBCS is moving in the right direction and is the equivalent of adding another arrow to the warfighter's quiver.

Turning to the Navy, the Cooperative Engagement Capability (CEC) provides a sensor network with integrated fire control to significantly improve air and missile defense capabilities. By combining data from multiple air search sensors, CEC can establish a single, real-time, composite track picture, greatly enhancing fleet air defense by making jamming more difficult and allocating defensive missiles on a battle group basis. CEC is also moving in the right direction to meet the warfighter's need.

Additionally, the Missile Defense Agency's (MDA) Command and Control, Battle Management and Communications (C2BMC) system currently play an important role in the pursuit of integration and interoperability efforts. Recently, MDA and the Services demonstrated interoperability between the THAAD and PATRIOT weapons systems and a "layered defense" design by incorporating Aegis, THAAD, and Patriot capabilities.

Way ahead and recommendations

All would agree missile defense is a complex, expensive, evolving enterprise—clearly required to protect our Homeland, our deployed military forces, and our Allies. That said, the technology challenges involved in the integration of disparate systems are not insurmountable. In many cases, policy constraints, releasability standards, and engagement guidelines remain the most vexing issues, requiring additional analysis and discussion. As Duane Neal accurately states in his recent article, *Succeeding at Integrated Air and Missile Defense*, "Deliberate analysis which allows the IAMD community of interest to identify gaps, discuss solutions, and communicate those needs to a variety of inter-, intra- and non-government entities advance a holistic effort for mitigating the risk from air and missile threats".

Open Architecture. From a technology standpoint, a clear understanding and enforcement of open-architecture standards and protocols are tantamount to achieving full integration of our missile defense platforms. History is replete with examples of weapons systems developed in isolation or "stove-pipes" that fail to fully exploit their potential to enhance missile defense operations. The Army's recent decision to acquire IBCS is an important step to address this issue while allowing the government to own and control the architecture. Bottom line: The Defense Department, in coordination with industry and other key stakeholders, plays an essential role in ensuring requirements are accurately conveyed and

Secure Networks. Protected network architectures provide the foundation for air and missile defense integration both now and in the future. Voice and data networks play an integral role in our current missile defense operations and support critical command, control and intelligence (C3I) tasks. The ability to integrate sensors and interceptors from multiple platforms provides significant opportunities to enhance missile defense operations globally. That said, cyber vulnerabilities are real and growing daily. To safeguard our ballistic missile defense architecture, MDA and others are establishing procedures to 1) know when penetrations occur, 2) isolate the penetration, 3) take corrective action, and 4) build redundancy and resiliency to sustain operations.

Training Is Critical. The importance of training readiness cannot be overstated. In many cases, less capable systems operated by trained crews are often more effective than technologically advanced systems operated by less proficient crews. In fact, minimally trained crews rarely utilize the full capabilities of our weapons platforms. Training readiness and crew proficiency are especially important as we integrate systems across services and among allies. Common terminology, engagement displays, and a common operating picture enhance the crew's ability to engage a threat with any sensor, best shooter. Establishing and adhering to training standards are key to ensuring

standardization and the necessary competence in pursuit of integration across the AMD community.

Warfighter's Requirements. Closely related to training readiness is the need to listen to the warfighter about their requirements. The use of reoccurring joint and combined exercises operations that integrate policy discussions with realistic, scenario-driven missile defense operations help to address these critical needs. It is also important to recognize the important role system design engineers play in conducting these training venues and capturing warfighter concerns. One example is MDA's Ballistic Missile Defense System Wargame (BMDSWG) series. Another possible example would be to merge USSTRATCOM's Nimble Titan series with USCENTCOM's air and missile defense exercise (AMDEX) construct.

Programs of Record. In testimony before Congress, Service Chiefs have frequently expressed their frustration with our current acquisition process. In many cases, programs of record are executed in an inefficient and costly manner, leading to delays in getting much-needed capabilities into the hands of warfighters. Regarding air and missile defense, IBCS serves as an example where selected components could be fielded in the Pacific today, dramatically improving our AMD posture while saving resources on short-term and temporary fixes.

In conclusion, the integration of missile defense system C2, sensors, and weapons is not a question of if, but when and to what degree. From maximizing system capabilities while reducing the impact of system limitations to expanding defended asset footprints, to reducing the cost per intercept, the benefits of integration are numerous and needed now more than ever before. No country can adequately address all of the global threats given the high demand and low density of our current AMD resources and their associated costs. Bottom line: we're all in this together and fully integrating our air and missile defense assets as quickly as possible gives us the best chance at providing the necessary protection today and in the future.

<https://www.realcleardefense.com/articles/2018/07/16/air-and-missile-defense-integration-needed-nowmore-than-ever-113607.html>

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The Washington Times (Washington, D.C.)

A Nuclear Guide to the Helsinki Summit

By Michaela Dodge

July 16, 2018 | ANALYSIS/OPINION:

The era of Great Power competition is back. Russia has made that quite clear.

Having invaded Georgia and Ukraine, Moscow now periodically threatens our NATO allies with nuclear attack. It reinforces these threats with "practice" military exercises and adds new types of nuclear weapons into its stockpile.

Small wonder then, that the meeting in Helsinki between President Trump and Russian President Vladimir Putin generated so much interest over the last week. Would it yield a breakthrough or just a photo-op? A love fest or fist fight?

Here's are some key questions that may help you decide whether the meeting was a hit or a miss on nukes and missile defense.

1. Did Mr. Trump let Mr. Putin know that the U.S. won't be extending the New START arms reduction treaty beyond its 2021 expiration date?

In hammering out the treaty, U.S. negotiators assumed relations between the two countries would be, at worst, benign. Consequently, they made a deal in which most of the reductions applied only to U.S. nukes. One-sided as it was, Russia has still, at times, built up its nuclear arsenal above the treaty ceilings. Moreover, the treaty is not effectively verifiable.

Extending New START would not contribute to “strategic stability,” because Russia is not interested in such stability. Its massive nuclear weapons modernization program and advantage in short-range nuclear weapons tell us as much.

Letting the treaty expire would strengthen U.S. negotiating leverage in the long run. Future negotiators can include Russia’s new nuclear weapons, such as those specifically designed to attack U.S. coastal areas. They can set U.S. nuclear weapon numbers based on Russia’s demonstrated, continuing antagonism rather than on wishful thinking about Moscow “softening” if the U.S. makes just one more concession.

For its part, Moscow is likely to be interested in future negotiations on strategic systems. Russia’s leadership has always been attracted to summit diplomacy. Moscow sees it as an affirmation of its great power status, despite Russia’s poor economic performance, conventional military inferiority, and negative demographic trends.

The U.S. is finally beginning its own nuclear weapons modernization program, making it more likely that Russia will seek arms control as a way to gain insights into such efforts, for example via on-site inspections that have become a standard of arms control agreements.

2. Did Mr. Trump raise the issue of Moscow’s continuing non-compliance with other pacts, such as the Intermediate-Range Nuclear Forces (INF) Treaty and the Chemical Weapons Convention?

New START defenders don’t want Mr. Trump to link Russia’s violations of other arms control agreements to the future of New START. But extending New START while countenancing these violations would indicate to Mr. Putin, and others, that we do not particularly value whether countries abide by their international obligations.

Russia’s INF violations are concerning because they are intended to drive a wedge between Washington and its NATO allies. This makes this treaty another excellent candidate for the scrapheap. What’s the point of having a treaty that only one party honors? For years, Russia has acted as if there were no INF Treaty whatsoever.

3. And possibly most important, did Mr. Trump give any indication that he might accede to Mr. Putin’s desire for the U.S. to limit or scrap its missile defense programs?

There is no doubt that Mr. Putin wishes to deny the West a strong missile defense. Cooperation on missile defense among the U.S. and its European allies has been a thorn in the Russian bear’s side since its inception.

But the proliferation of ballistic missiles — from the Middle East to North Korea — makes advancement of the U.S. missile defense program and continued cooperation with our allies a strategic imperative. Should we not intercept a missile en route toward its victims just because its launch point was somewhere in Russia?

Summits can serve U.S. interests. We can use them to counter Russia’s propaganda or to find areas of mutual interest and potential cooperation. But placating an adversarial regime to come to a pretense of an agreement is not it.

<https://www.washingtontimes.com/news/2018/jul/16/a-nuclear-guide-to-the-helsinki-summit/>

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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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