



UNITED STATES AIR FORCE
CENTER FOR STRATEGIC
DETERRENCE STUDIES

NEWS AND ANALYSIS

Issue 1389
25 October 2019

Feature Report

“Exploring the Role Nuclear Weapons Could Play in Deterring Russian Threats to the Baltic States”. By Paul K. Davis, J. Michael Gilmore, David R. Frelinger, Edward Geist, Christopher K. Gilmore, Jenny Oberholtzer, Danielle C. Tarraf. Published by RAND; Oct. 24, 2019

https://www.rand.org/pubs/research_reports/RR2781.html

Key Findings

- The do-nothing option is very risky: NATO's current deterrent in the Baltic states is militarily weak and generally questionable.
- Improvements to conventional forces have the highest priority; they could also enhance the value of some nuclear options. Some of these improvements are underway.
- Practiced options for extremely fast response without much strategic warning are important because Russia might otherwise find ways, using deception, to accomplish a short-warning fait accompli.
- Despite Russia's regional escalation dominance, the modernized nuclear options might be valuable in certain circumstances of crisis or conflict if Russian leaders have not already anticipated and discounted the significance of NATO's nuclear use (whether a first use or in response to Russian first use).
- Given the limited military value for modernized NATO nonstrategic nuclear weapons, some may question the priority of pursuing such modernization. However, modernized nuclear options would reduce Russian asymmetries in theater-nuclear matters, which can be significant to public and international perceptions. Also, reducing nonstrategic nuclear weapon asymmetries might cause NATO allies to feel more assured of the credibility of U.S. security guarantees and might improve U.S. leverage in possible negotiations about nonstrategic nuclear weapons (the United States has very little leverage now). Finally, modernized nuclear options might be necessary for dealing with security challenges other than Russia.

TABLE OF CONTENTS

NUCLEAR WEAPONS

- [Rick Perry: DOE Has Embraced Nuclear Weapons Work, Made Strides in Nuclear Cleanup](#) (Aiken Standard)
In a July interview with Fox News, Perry described the country's nuclear arsenal as the "most developed" and up-to-date "in the world."
- [Boeing Could Be Out of the Air Force's Competition for Next-Gen ICBMs for Good](#) (Defense News)
GBSD is the Air Force's program to replace its existing Minuteman III intercontinental ballistic missiles, a major priority for the service as well as for U.S. Strategic Command, which oversees the operations of America's nuclear arsenal.
- [The US Nuclear Forces' Dr. Strangelove-era Messaging System Finally Got Rid of Its Floppy Disks](#) (C4ISRNET)
In 2016, the Government Accountability Office wrote that SACCS runs on an IBM Series/1 computer dating from the 1970s and that the Defense Department planned "to update its data storage solutions, port expansion processors, portable terminals and desktop terminals by the end of fiscal year 2017," but it's unclear whether those upgrades have occurred.

US COUNTER-WMD

- [Smaller, Faster Bites Streamline Acquisition](#) (Army ALT Magazine)
JWARN is a warning and reporting system that communicates information about chemical, biological, radiological and nuclear (CBRN) incidents across the chain of command and to affected units
- [Mount Sinai Receives U.S. Military Contract to Identify Exposure to Weaponized Infectious Agents](#) (Global Biodefense)
Researchers from the Icahn School of Medicine at Mount Sinai, working with academic and industry partners, are working on new methods of finding molecular signatures in blood that can identify exposures and the time of exposure.
- [Experts Testify United States Is Underprepared for Bioterrorism Threats](#) (Homeland Preparedness News)
Jennifer Rakeman, assistant commissioner and director of the Public Health Laboratory at the Department of Health and Mental Hygiene in New York City, told the committee the detection of agents by national agencies falls short.

US ARMS CONTROL

- [North Korean Leader Kim Jong Un Signals He's Ready for 'New Way,' Experts Say](#) (VOA)
On Wednesday, North Korea's official state media released pictures of Kim riding on a white horse on Mount Paektu, a place Kim is known to visit before making a big decision.

COMMENTARY

- [The Bomb in College Classrooms](#) (Inside Higher Ed)
Against this backdrop, we should be concerned that most current college students will graduate without any formal introduction to weapons of mass destruction and their means of control.
- [Don't Be Surprised When South Korea Wants Nuclear Weapons](#) (Bulletin of the Atomic Scientists)
The reason for this shift is that today, South Koreans cast a much more doubtful eye toward the United States security guarantee than ever.
- [A Cheaper Nuclear Sponge](#) (War on the Rocks)
Schelling was right: Intercontinental ballistic missiles (ICBMs) are by far the least valuable leg of the so-called nuclear triad, which also consists of submarine-launched ballistic missiles, and air-delivered cruise missiles and gravity bombs.

NUCLEAR WEAPONS

Aiken Standard (Aiken, S.C.)

Rick Perry: DOE Has Embraced Nuclear Weapons Work, Made Strides in Nuclear Cleanup

By Colin Demarest

Oct. 19, 2019

In a resignation letter tendered to President Donald Trump, U.S. Secretary of Energy Rick Perry reviewed his department's accomplishments over the years, including nuclear cleanup and weapons work, both of which are conducted at the Savannah River Site.

"The Department of Energy has also embraced, with success, the national security mission of modernizing our nuclear enterprise to make sure our weapons are safe and work as designed," Perry wrote, after mentioning work across the various national labs, one of which is directly south of Aiken. "We have also achieved unprecedented success in the clean-up of our nuclear facilities."

In a July interview with Fox News, Perry described the country's nuclear arsenal as the "most developed" and up-to-date "in the world." The energy secretary said modernization efforts are well underway, ensuring weapons will "work as advertised" – if ever needed.

"In some cases there's weapons that are 40 years old," he said in the interview, which took place in Jerusalem. "As any type of product, it's going to have some degradation. We have the process in place to make sure that our weapons are as modern ... and in the right condition as they need to be."

Perry's resignation letter was posted to the Energy Department's website Thursday, the same day news broke of his resignation, which is effective later this year.

Footage from Perry's tour of Plant Vogtle, across the river in Georgia, is prominently featured in a farewell video posted to his official Twitter account.

On Thursday night, National Nuclear Security Administration chief Lisa Gordon-Hagerty thanked Perry "for all" he has done to advance the nation's energy and nuclear security fields.

The NNSA is the Energy Department's semiautonomous agency in charge of nuclear weapons and related nonproliferation.

Under Perry's watch – not over yet – the federal government managed to terminate the never-finished, multibillion-dollar Mixed Oxide Fuel Fabrication Facility at SRS, something both the Obama and Trump administrations had been angling to do.

In May 2018, the NNSA and the U.S. Department of Defense jointly recommended repurposing MOX's bones for an enduring nuclear weapons mission: plutonium pit production. Related efforts are already underway.

Gordon-Hagerty in a mid-June interview with the Aiken Standard said both Perry and Trump support a healthy nuclear complex.

"They are absolutely wedded to the prospect of making sure that we have a robust and a resilient enterprise," the NNSA administrator said. "Not only now, but in the future."

"Now more than ever, I believe strongly in the mission of the Department of Energy," Perry wrote in his signing off. "The people across the enterprise have a sincere commitment to this country."

Colin Demarest covers the Savannah River Site, the U.S. Department of Energy, the National Nuclear Security Administration and government in general. Follow him on Twitter: @demarest_colin

https://www.aikenstandard.com/news/rick-perry-doe-has-embraced-nuclear-weapons-work-made-strides/article_2a1b4ace-f1b5-11e9-9bbc-efdd612008ac.html

[Return to top](#)

Defense News (Washington, D.C.)

Boeing Could Be Out of the Air Force's Competition for Next-Gen ICBMs for Good

By Valerie Insinna

Oct. 22, 2019

WASHINGTON — Boeing's risk reduction contract for the Air Force's Ground Based Strategic Deterrent program is functionally cancelled, the company announced Oct. 21.

"Boeing is disappointed in the Air Force's decision to not allot additional funding for the GBSD Technology Maturation and Risk Reduction (TMRR) contract," said Boeing spokesman Todd Blecher. "The Boeing team has delivered substantial value under the contract, achieved all contract milestones on time and received strong performance feedback from the Air Force."

"Continuing Boeing's TMRR contract would advance the Air Force's objectives of maturing the missile system's design and reducing the risk for this critical national priority capability," he added.

GBSD is the Air Force's program to replace its existing Minuteman III intercontinental ballistic missiles, a major priority for the service as well as for U.S. Strategic Command, which oversees the operations of America's nuclear arsenal.

Earlier on Monday evening, Politico reported that the Air Force had sent a letter to Boeing last week declaring its intent to stop funding the TMRR contract.

Without additional money from the Air Force to continue work, Boeing expected its funding stream for the GBSD contract to be exhausted on Oct. 18, the company stated in an Oct. 16 letter to the GBSD program office at Hill Air Force Base, Utah.

"The Air Force's decision not to allocate any further funding to the TMRR contract requires immediate and irrevocable actions by Boeing to wind down contract performance within the allotted funds. These measures include the reassignment of approximately 300 Boeing employees and the flow-down of a Stop Work notice to all suppliers working on the TMRR contract," states the letter, which was obtained by Defense News.

Air Force spokeswoman Capt. Cara Bousie told Defense News that the service had not cancelled Boeing's TMRR contract. However, she declined to comment on whether the Air Force had sent Boeing a letter stating its intention to curtail funding for the contract.

Regardless of the semantics, a decision to cut short the TMRR contract would effectively hand the GBSD award to Northrop Grumman, the sole company competing against Boeing to produce the weapon system.

Both Boeing and Northrop were awarded risk reduction contracts worth up to \$359 million in 2017, beating out Lockheed Martin for the chance to bring their designs into the production stage.

But Boeing withdrew from the GBSD competition in July, claiming that Northrop Grumman's purchase of one of the only two U.S. solid rocket motor manufacturers — Orbital ATK, now known

as Northrop Grumman Innovation Systems — gave the company an unfair advantage in terms of being able to offer the lowest-cost system.

In a July 23 letter, Leanne Caret, who leads Boeing's defense business, wrote that the current acquisition approach gives Northrop "inherently unfair cost, resource and integration advantages."

"We lack confidence in the fairness of any procurement that does not correct this basic imbalance between competitors," she stated. Caret added that a joint bid between the two companies was unrealistic, as Northrop would have no incentive to partner with Boeing when it can put forward a solo bid.

However, Boeing switched tactics about a month later, with Frank McCall, its director of strategic deterrence systems, telling reporters in September that the company hoped to persuade the Air Force to force Northrop to partner with it.

"We think clearly it's time for the Air Force or other governmental entities to engage and direct the right solution. Northrop has elected not to do that," McCall said during the Air Force Association's annual conference. "So, we're looking for government intervention to drive us to the best solution."

The Air Force did not take Boeing up on that suggestion. Nor did Northrop, which pointedly released its list of suppliers days before the AFA conference. The list — which featured Aerojet Rocketdyne, Collins Aerospace, Lockheed Martin and other major defense contractors — did not include Boeing.

Boeing, in its letter to the program office, stated that the dissolution of the risk reduction contract could disadvantage the Air Force as it moves forward with the GBSD program, even if it ultimately opts to sole-source from Northrop.

"The Government's decision also prevents Boeing from completing the work left to be performed under the TMRR contract, including the major milestones of a successful Software System Review and Preliminary Design Review," it said. "We believe this work would provide substantial value to the Government, irrespective of the fact that Boeing will not participate as a prime offeror under the current EMD [engineering, manufacturing and development] solicitation structure for the next phase of the GBSD program.

In September, McCall pointed to Boeing's ongoing risk reduction work on GBSD as a positive sign that the service may not be ready to sole-source the program to Northrop.

"The service is maintaining our work," he said. "They continue to accept our deliverables, continue to fund our contract. So, I think we're in good shape with the service."

But with the TMRR contract revoked, Boeing's last hope may be an appeal to Congress. Sen. Doug Jones of Alabama as someone who has already raised shown support for Boeing's position, McCall said in September.

McCall declined to name others, but should this turn into a legislative fight, it could come down to Boeing's supporters – with strongholds in Alabama, Washington and Missouri – versus those of Northrop Grumman.

Aaron Mehta in Washington contributed to this report.

<https://www.defensenews.com/smr/nuclear-arsenal/2019/10/22/boeing-could-be-out-of-the-air-forces-competition-for-next-gen-icbms-for-good/>

[Return to top](#)

C4ISRNET (Vienna, Va.)

The US Nuclear Forces' Dr. Strangelove-era Messaging System Finally Got Rid of Its Floppy Disks

By Valerie Insinna

Oct. 17, 2019

OFFUTT AIR FORCE BASE, Neb. — In 2014, “60 Minutes” made famous the 8-inch floppy disks used by one antiquated Air Force computer system that, in a crisis, could receive an order from the president to launch nuclear missiles from silos across the United States.

But no more. At long last, that system, the Strategic Automated Command and Control System or SACCS, has dumped the floppy disk, moving to a “highly secure solid state digital storage solution” this past June, said Lt. Col. Jason Rossi, commander of the Air Force’s 595th Strategic Communications Squadron.

Think of SACCS as the U.S. nuclear force’s version of AOL instant messenger — one of the many old, duplicative systems used by U.S. Strategic Command to send emergency action messages from nuclear command centers to forces in the field. Based in Offutt Air Force Base, Neb., the 595th is charged with upkeeping SACCS and ensuring its day-to-day operations.

“I joke with people and say it’s the Air Force’s oldest IT system. But it’s the age that provides that security,” Rossi said in an October interview. “You can’t hack something that doesn’t have an IP address. It’s a very unique system — it is old and it is very good.”

In 2016, the Government Accountability Office wrote that SACCS runs on an IBM Series/1 computer dating from the 1970s and that the Defense Department planned “to update its data storage solutions, port expansion processors, portable terminals and desktop terminals by the end of fiscal year 2017,” but it’s unclear whether those upgrades have occurred.

Col. Hayley James, deputy group commander for the 595th Command and Control Group, acknowledged that the Air Force is seeking a replacement for SACCS, but both she and Rossi declined to comment on that effort. Asked about ongoing modernization of the current SACCS system, Rossi would only acknowledge that the Air Force has made recent enhancements to enable speed or connectivity.

Software and Soldering Irons

It’s not easy maintaining an IT system that dates from the same era as disco.

Both active-duty and civilian personnel are needed to keep SACCS operational, but most of the active-duty maintainers working on the system are young and less-experienced. Many come from the “cyber transport” career field, meaning that they are trained to manage modern IT infrastructure, not antiquated systems like SACCS that require maintainers to learn skills like how to solder metal, Rossi said.

“I have guys in here who have circuits, diodes, and resistors memorized,” he said. “They use a TO [technical order] to make sure they’re right, but these guys have been doing it for so long, when the parts come in, they can tell you what’s wrong just based on a fault code or something. That level of expertise is very hard to replace. It’s not sexy work. It’s soldering irons and micro-miniature microscopes.”

One of the guys doing that work is Robert Norman, a civilian Air Force employee with more than four years of experience fixing the electronics on SACCS.

“Any electronic repair is going to take a lot of work. I shouldn’t say it’s difficult, [but] unfortunately a lot of the newer electronics are plug and play,” he said, explaining that when electronic components like motherboards or microchips break on newer systems, the common practice is to throw out them out and replace them. On SACCS, all of those pieces are repaired — which for maintainers could mean spending hours spent under a microscope, slowly but deliberately replacing a copper wire laced throughout a circuit board, for example.

“The challenges get a little larger when we’re actually repairing them down to component level,” he said.

It’s work so specialized that the Air Force hired civilians to fix SACCS components rather than teaching the trade to airmen, who would need years of training to achieve the competency of the employees currently working in the repair shop, some of whom have more than a decade of experience on the job.

Instead, airmen are responsible for diagnosing problems with the system, testing components and then handing off faulty ones to civilian maintainers for repairs.

“The biggest challenge is training. A lot of young folks aren’t exposed to this kind of system and it usually takes quite some time for everyone to get trained up and to be able to work with an older system like this,” said Senior Airman Aaron Mentch, a network technician who has worked on SACCS for about a year.

While SACC’s hardware is decades old, its software is constantly refreshed by young Air Force programmers who learn software development skills at Offutt’s Rapid Agile Development Lab. Most work on the software and interfaces seen by end-users like intercontinental ballistic missile launch crews, rewriting legacy code to make it more modern and sustainable, said Master Sgt. Travis Menard, 595th SCS’s programming section chief.

SACCS programmers sometimes get the opportunity to play around with different coding techniques by creating apps for Global Strike Command, but the daily job of updating SACCS’s code isn’t the most glamorous job for an Air Force programmer.

To help keep airmen engaged, the 595th’s most promising programmers are regularly sent on short-term assignments to Air Force software development hubs like Boston-based Kessel Run or Los Angeles-based Kobayashi Maru, or to the Shadow Operations Center at Nellis Air Force Base, Nev.

“When they do understand the impact that they have on the mission, they’re much more excited to come in and be working on it, but at the same time we want to create those environments to work on modern software and give them opportunities to go and participate with other organizations that are doing other flavors of development,” Menard said.

“We are sending our best and brightest out to those other programming entities,” Rossi added. “We have an airman that is heading out this month to Kessel Run — trained here, went and did a [temporary duty assignment] to Kessel Run and was by name requested for Kessel Run. We’re more of a training ground.”

<https://www.c4isrnet.com/air/2019/10/17/the-us-nuclear-forces-dr-strangelove-era-messaging-system-finally-got-rid-of-its-floppy-disks/>

[Return to top](#)

US COUNTER-WMD

Army ALT Magazine (Aberdeen Proving Ground, Maryland)

Smaller, Faster Bites Streamline Acquisition

By Cmdr. Alan J. Schiaffino and Mary C. Baker

Oct. 7, 2019

How do we measure our success in acquisition streamlining?

In today's information-enabled military environment, it is more important than ever to use flexible, agile, mobile and user-friendly applications that provide information to our commanders at least as quickly as the enemy is able to operate. The information-sharing environment of our forces is constantly evolving, and for the program offices that deliver capability to our warfighters, fast implementation of new strategies or infrastructures is crucial to deliver tools that are still relevant by the time they reach the field.

The Joint Warning and Reporting Network (JWARN) and Joint Effects Model (JEM) are software applications being developed for all services and the National Guard. JWARN is a warning and reporting system that communicates information about chemical, biological, radiological and nuclear (CBRN) incidents across the chain of command and to affected units; JEM is a modeling-and-simulations application that can provide high-fidelity plots of an affected hazard area after a CBRN attack has occurred or to assist operational planning efforts as forces prepare for the possibility of a future incident. Both programs are designed to operate on hardware provided by the services.

Each service's approach to the CBRN mission is different, because of the differences in missions of the services themselves. For example, the Army may have forward-deployed forces maneuvering through a battlefield where the enemy might employ chemical weapons in an attempt to prevent that maneuver; the Air Force's interest in CBRN events is more focused on defending a well-established air base that is (obviously) not maneuvering. Therefore, an Army command post needs to see a plot of where a chemical attack occurred and the area contaminated by that attack, and it needs to be able to plot that "picture" on command-and-control maps, which depict where friendly units are and what direction they are traveling. In the Air Force, the emergency management personnel who are charged with responding to CBRN events need to see where on an air base a chemical detection may have occurred and the parts of the base affected by that attack, so that they can adjust operations accordingly and begin decontamination efforts as needed.

JEM MODELS THE ATTACK

Using current weather observations and forecasts, JEM can provide a high-fidelity plot of the affected area that the Air Force would need to determine which part of the base is affected; the Army can use the plots to anticipate which areas need to be avoided by ground troops in the area. Navy crews on ships and aircraft could be supporting relief efforts around a radiologically contaminated area, similar to the response to the Fukushima earthquake, for example, and may need to plan accordingly. And all services have a requirement to notify higher headquarters and other affected units if they observe a CBRN attack or incident, for which JWARN provides the messaging capability.

Furthermore, JWARN's ability to overlay graphical depictions of those CBRN events onto a command-and-control map that also shows the locations of friendly forces, as well as neutral (nonparticipating) units or known threats, is of utmost importance for an operational commander

who needs to understand the tactical significance of a CBRN event and decide what to do next. The personnel managing a CBRN incident might only be concerned about events occurring in their immediate area of responsibility, but the cloud-based implementation of JEM and JWARN allows users to track events worldwide.

Each service operates in a different environment and with different constraints, with the result that each has developed its own command-and-control architecture tailored to its unique needs. The Army uses more robust command posts, complete with tactical servers dedicated to maintaining a tactical and operational picture of what is happening. The Marine Corps tends to take a more expeditionary approach to land warfare and relies on smaller, lighter systems—primarily its Joint Tactical COP Workstation (JTCW, where “COP” is an acronym for common operating picture). These ruggedized laptops perform a similar function to the larger systems used by the Army, but are smaller and lighter than the full complement of servers deployed by an Army brigade.

Air Force emergency management teams use ordinary Windows-based computers to perform their base defense functions. Navy ships have a customized architecture of command-and-control servers networked with personal computer workstations, and while the ships themselves maneuver through the battlespace, the computer networks onboard are pretty well locked into place—i.e., they are not taken down and later reassembled like those of an Army unit on the move.

Because of these different operational environments and considerations faced by the services, each has developed different approaches to how they handle their information and messaging needs. JWARN and JEM run on the hardware used by the services for their other command-and-control functions, and that means that JWARN and JEM developers must accommodate a wide variety of computer architectures. Those environments range from standard desktop computers used by the Air Force, to command post servers used by the Army, to a cloud-based implementation that can be accessed globally by anyone with a web browser and proper authentication. These complex systems pose a particular challenge to developers trying to field products into those environments. Because each service’s architecture must integrate multiple programs and resources to field the overall system, a schedule issue for one component may have cascading effects across the entire system.

MULTIPLES AND MULTIPLES

That challenge is compounded for joint programs like JWARN and JEM that must integrate with multiple service architectures, while each architecture must itself integrate multiple programs and resources. For example, JWARN and JEM may be required to pass warning information via one method when installed in the Army’s Command Post Computing Environment, but the Marine Corps’ Joint Tactical COP Workstation may use an entirely different messaging protocol.

With a traditional “single step to full capability” approach to acquisition, that could spell unacceptable program delays. For example, as the Army’s command-and-control system delivery schedule is built, the program management office in charge of that system is building the schedule around a complex series of applications being developed and integrated together. JEM and JWARN are two of those applications, but there are numerous others—many of which are unique to the Army. Meanwhile, the Navy builds its architecture around the integration of a similarly complex series of different applications. The same goes for the Marine Corps, Air Force and National Guard. The JWARN and JEM programs might never be able to field their software if they had to wait for a time when all services had “finished” building their computing environments.

‘MAKE THE SOFTWARE MORE USEFUL’

The first iterations of JEM and JWARN had been developed, but operational users saw new opportunity for what the programs could do. By using a more modern web-based interface, the

programs could be adapted to run in a wider variety of environments. The server that is actually “running” the software could be installed in a place that made sense—in some cases, on a local server at the command post, or perhaps in a cloud-based server that is globally accessible. The user would simply point a web browser to the appropriate server location. This web-based approach was one part of a three-pronged strategy to make the software more useful.

In 2014, the Joint Requirements Office for Chemical, Biological, Radiological, and Nuclear Defense approved the requirements documents for a second version of JWARN and JEM. This second version (“JWARN 2” and “JEM 2”) would be where the newer web-based interface could be implemented. The Joint Requirements Office, the program offices for each application and the services’ stakeholders also seized the opportunity to take a new approach to software development. The commercial side of the software industry had been leveraging faster development cycles with an approach known as Agile development.

GET AGILE

Practitioners of Agile development subscribe to 12 principles outlined in the “Agile Manifesto.” The first two of these principles describe the value of “early and continuous delivery of valuable software,” and “welcoming changing requirements, even late in development.” The thought of fluid, evolving requirements might make a traditional defense acquisition professional cringe, but the commercial world recognized that tackling software development challenges with smaller, more easily accomplished steps ultimately resulted in more useful and more relevant software than when developers attempted to make one monolithic delivery of a grand design.

In 2012, the Joint Requirements Oversight Council updated its Joint Capabilities Integration and Development System (JCIDS) manual, the “instruction book” for how the requirements process works to acquire new defense systems and capabilities. One such revision made allowance for the fact that software development occurs in a context where the rate of change—in both the requirements and the environments in which software must operate—is so fast that it can often outpace the traditional acquisition system’s very bureaucratic required processes. It offered an alternative model, in which a system’s requirements are bounded on four sides by “Organization and Oversight,” “Hardware Refresh, Enhancements and Integration Cost Controls,” “Application and System Software Development Cost Controls,” and “Capability Requirements and Initial Minimum Values,” (which could be simplified as “Oversight,” “Hardware Cost Limits,” “Software Cost Limits,” and “Minimum Capability Required”). As long as a program is staying within the “box” bounded by those four areas, the requirements process can be delegated to a lower level, allowing for more rapid requirements document updates, which in turn authorize more frequent updates and enhancements to the software itself.

In our personal lives, we are accustomed to software on our computers and mobile devices being updated on an almost daily basis, so this might still seem like an overly bureaucratic way of managing what is now “normal.” But it’s important to remember that without requirements documents stating a validated capability need, a program office is not authorized to spend money to develop or enhance something—even if it seems like the operational need is obvious.

On the other hand, the Defense Acquisition System is designed around holding programs (and their managers) accountable for fulfilling all of the requirements outlined in the programs’ requirements documents, by a specified deadline. So, a requirements document that outlines a “blank check” of continuous updates and enhancements to be pursued indefinitely is not an option, either.

Yet we know from personal experience that that is exactly how software works in the 21st century. Requirements evolve, computing environments (e.g., operating systems, Java versions, message protocols, etc.) evolve, and if software doesn’t evolve along with them, then the obsolescence clock

starts ticking as soon as that software development stops. The “Information Technology Box” (IT Box) was a compromise between the two realities, trying to blend the accountability and rigor of the traditional Defense Acquisition System with the reality of rapidly changing information technology requirements.

Dynamic requirements and frequent update cycles don’t mesh particularly well with the traditional acquisition process, but by the time that the initial capabilities documents for the second increments of JEM and JWARN were being written in 2014, the JCIDS manual had been updated and included provisions for a new, more agile approach to defense acquisition of software systems.

This new approach to software development in a defense context, the IT Box, was an initiative to bring some of the benefits of Agile development to a notoriously cumbersome defense acquisition system. It brought about a paradigm shift in the requirements-development process by breaking requirements into related functional groupings, known as requirements-definition packages, and then subdividing those into more manageable capability drops. So rather than an overarching requirements document tasking the program office to create a piece of software containing dozens (or hundreds) of new capabilities, each capability drop might only direct the addition of 10 or so new features.

THE IT BOX

More importantly, requirements approval and updates for those smaller packages and drops are delegated down to the O-6 (colonel) level to allow for more frequent updates. People representing the operational community for each of the services come together with leaders from the program offices and the Pentagon’s Joint Requirements Office for CBRN Defense, and form a collaborative group called an integrated capability team. This team meets regularly to talk about what has been delivered so far, the services’ priorities for features still to be built, and feedback from everyone involved—whether it be the operational forces using the capability or those at the Pentagon who are overseeing and funding the program. This working group is able to hash out the best path forward, and then take those recommendations to an approval authority at the O-6 level, rather than staffing the updates up to the general or flag officer level. The program office and developer can begin to tackle the requirements that are known and stable while other requirements might still be in flux. The end result keeps the product relevant while minimizing the bureaucracy and delay.

SMALLER, FASTER

Combining two approaches has led to more user satisfaction and a sense of “buy-in” from the operational user community: using smaller, more frequent updates to the core software capabilities described in JWARN’s and JEM’s first requirements-definition packages; and targeting integration with the individual services as their systems are ready to receive the updates. Feedback has been overwhelmingly positive, both from operational users at user feedback events and training sessions, and at the services’ stakeholder level in the integrated capability teams that represent the services to the Joint Requirements Office.

That positive feedback and increased demand was captured by a memo from the Army Staff’s G-8 on Sept. 25, 2017, requesting that the fielding of the new version of JWARN be expedited to 8th Army on the Korean peninsula. Furthermore, the development of a cloud-based capability for JWARN and JEM has made the software available to users even when their service’s native command-and-control systems are not available—for example, when units are back home in garrison. Users are now able to see meaningful progress in software development and can use the functionality that is ready now, even as they wait for enhanced functionality to be introduced later.

Perhaps the clearest example of the benefits of this streamlined approach can be seen in the transition of the products to the Defense Information Systems Agency (DISA) milCloud. The milCloud provides a platform for users around the world to access JEM and JWARN software. Because it is a cloud-based software platform, users are able to see a hierarchical list of CBRN events being updated by themselves and other users around the world. Sites exist on both an unclassified and a secret network, and there are lists of events on a training site and an operational site for each security level (unclassified and secret).

DATA SYNTHESIS

JWARN communicates information about CBRN incidents across the chain of command and to affected units. Its ability to overlay graphical depictions of CBRN events onto a command-and-control map that also shows the locations of friendly forces or known threats is of vital importance for a commander who needs to decide what to do after a CBRN event. (Photo courtesy of the authors)

Integrating JEM and JWARN with the services' command-and-control systems—which provide command post personnel with situational awareness of friendly force disposition, neutrals and threats—is still an important requirement. However, in DISA's milCloud, the program office has control of that environment and is not beholden to the services' development schedules for its individual command-and-control systems.

Previously, an update to a third-party software application like JEM or JWARN might have been ready for months (sometimes a year or more) before the service would be ready to update its command-and-control system with new or updated software applications. Now when a new capability drop is ready, it can be fielded in the milCloud and made available to users worldwide. Users accessing the cloud-based version of the software need only a web browser and an account on the system, and they can access the most up-to-date version of the software available. The user does not have to download, install or update any software locally, nor does the user's system administrator, since the software is delivered dynamically as a web page from a server that is maintained by the program office. This speeds user adoption, training and feedback, and gets user feedback back to the developers more quickly, ultimately strengthening user satisfaction.

BETTERING A BAD REPUTATION

The JWARN 1 program of record began more than 10 years ago using the older JCIDS process, which was structured primarily to support hardware development. Unfortunately, JWARN 1 developed a dubious reputation in some circles because development was slow and costly, and didn't deliver product quickly enough for the return on investment to be obvious to the user.

When JWARN 2 adopted the IT Box concept and Agile development paradigm, it allowed the user more buy-in with a rapid and more streamlined cycle. The user sees multiple software builds of incremental capability solutions, the results of the development, and a path forward.

The combination of stakeholder involvement in the requirements process by the integrated concept team, along with more frequent capability drops, has the operational user community excited about the product again. When the initial capabilities documents for the second increments of JWARN and JEM were being developed, the services were outlining their requirements for the implementations that would be fielded on their particular systems. The integration with the Army's Battle Command Common Services servers was the first iteration of JWARN 2 and JEM 2 to be tested, followed closely by a limited deployment on the DISA milCloud, which was the Air Force's chosen means of accessing the capability.

When the service-specific capability-drop requirements were first being written, the U.S. Marine Corps knew it would need a warning and reporting capability in the field. But when it came to the

high-fidelity analysis for which JEM was intended, the Marine Corps opted instead to “outsource” its modeling needs to the Defense Threat Reduction Agency rather than having to maintain and support a modeling application and train its user base. So the Marine Corps did not even levy a requirement to integrate the software with their systems in the field.

However, after seeing the success the other services were experiencing with the new generation of JWARN and JEM, both on battlefield servers and in the cloud, the Marine Corps asked to “come back in” with JEM integration after all. Furthermore, the services gave unanimous support in August 2018 when the JPEO for CBRN Defense issued a first-of-its-kind multiservice fielding decision that made the version of the software on milCloud available to all services for operational use and training. The ubiquitous nature of the cloud and the similarity of the software across multiple environments made it possible to field to all services with one fielding decision.

CONCLUSION

There’s a lot of talk about “acquisition streamlining” lately, and JWARN and JEM have shown just how effective it can be to use Agile development principles to tackle big challenges one little step at a time. By adapting the JCIDS process to allow for a faster, more fluid development approach, developers can provide users with results within a time horizon where individual users see results. When users see results, they buy into the process and the feedback loop gets even stronger. From a program with a reputation for slow development, to a new generation that’s redefining what’s possible by leveraging the cloud, the results have spoken for themselves.

For more information, go to <https://www.jpeocbrnd.osd.mil>.

CMDR. J. ALAN SCHIAFFINO, U.S. Navy, serves as acquisition product manager for JWARN in the Joint Program Executive Office for Chemical, Biological, Radiological and Nuclear Defense (JPEO-CBRND). Before joining JPEO-CBRND, Schiaffino was operational test director for the E-2D Advanced Hawkeye, a multibillion dollar Acquisition Category ID program; executive officer and commanding officer of Navy Recruiting District Saint Louis; and operations officer on the USS CARL VINSON, planning and executing regional stability operations in the South China Sea and Korean Operating Area.

MARY C. BAKER, an associate at Booz Allen Hamilton (BAH), provides acquisition and operations support for JWARN. Before joining JWARN and as a BAH consultant, she maintained acquisition and program management for ship-building programs in the Naval Information Warfare Systems Command in San Diego. Baker is an Army combat veteran and retired as a first sergeant in 2013.

<https://asc.army.mil/web/news-alt-ond19-smaller-faster-bites-streamline-acquisition/>

[Return to top](#)

Global Biodefense (Seattle, Wash.)

Mount Sinai Receives U.S. Military Contract to Identify Exposure to Weaponized Infectious Agents

By Global Biodefense

Oct. 10, 2019

Rapidly determining exposure to weaponized infectious agents, chemicals, or radiation is one of the greatest challenges of force protection and homeland security.

Researchers from the Icahn School of Medicine at Mount Sinai, working with academic and industry partners, are working on new methods of finding molecular signatures in blood that can identify exposures and the time of exposure. They are also developing field-deployable instruments that can perform these sensitive diagnostic analyses.

“The human body logs exposures in a rich biographical record that we carry around with us in our epigenomes,” says Stuart Sealfon, MD, Professor of Neurology at the Icahn School of Medicine at Mount Sinai.

Sealfon is the Principal Investigator on the 4-year research project funded by the the Defense Advanced Research Projects Agency (DARPA) Epigenetic Characterization and Observation (ECHO) program.

“The ECHO technology we’re developing will enable us to quickly read someone’s epigenome from a small amount of blood and measure any changes in the cells to accurately predict exposure to hazardous agents or materials,” noted Sealfon.

The researchers will focus on creating advanced microfluidic instrumentation with a reduced footprint that can be easily deployed and moved around battlefields for the sequencing and analysis of human cells. “This level of portability could enhance the military’s ability to conduct timely surveillance of emerging threats around the world where U.S. troops or our allies are actively engaged,” he says.

It could also make a difference by ensuring that medical countermeasures are undertaken when soldiers encounter hazardous nerve agents, such as sarin and VX, or other toxic agents, such as phosgene and chlorine.

Mount Sinai will draw on its considerable experience in the fields of genomics, proteomics, and epigenomics over the course of the research project. In order to detect epigenetic markers in small amounts of blood, the researchers will also leverage their strengths in the rapidly unfolding science of single cell biology.

“My laboratory is an integrated computational and experimental group with cell biologists, molecular biologists, computer scientists bioinformaticists, physicists, mathematic modelers, and database developers,” Dr. Sealfon says. “We are also fortunate to have outstanding collaborators within Mount Sinai—including Robert Sebra, PhD, Associate Professor, Department of Genetics and Genomic Sciences, and his lab—and from outside laboratories, since that gives us a broader range of expertise.”

Defense security is only one aspect of the project funded by DARPA. Just as important, according to Dr. Sealfon, is the potential application of ECHO technology in general medicine. “It could be valuable in the field of infectious disease, for example, to quickly and reliably predict if someone has a bacterial or viral infection during the influenza season, giving patients a point-of-care benefit,” he says.

Another possible outgrowth of the DARPA work is the development of basic research instruments that could generate epigenetic data on single cells within minutes. "It's likely that medical applications from this research program will be realized in a shorter time frame than those on the military side, which are more demanding," Dr. Sealton says. "This may result, for example, in the next-generation sequencing technology making many of the genomic analyses we now do much faster, easier, and more accessible."

<https://globalbiodefense.com/2019/10/10/mount-sinai-receives-u-s-military-contract-to-identify-exposure-to-weaponized-infectious-agents/>

[Return to top](#)

Homeland Preparedness News (Washington, D.C.)

Experts Testify United States Is Underprepared for Bioterrorism Threats

By Claudia Adrien

Oct. 18, 2019

Terrorist threats against the United States continue to grow and evolve, including the use of non-conventional weapons, begging the question of whether this country is well-equipped for such attacks.

The conclusion of experts who testified Thursday before the U.S. House Homeland Security Subcommittee on Emergency Preparedness, Response, and Recovery was that the country is not equipped. The hearing was entitled, "Defending the Homeland from Bioterrorism: Are We Prepared?"

"I think it's important to remember that the nation is not adequately prepared and has not been adequately prepared for more than a decade now," said Asha George, executive director of the Bipartisan Commission on Biodefense. "And the hearings this committee has had numerous times have demonstrated that. Worse, current efforts to develop new technologies to detect the threat are insufficient and are going in the wrong direction."

One such program George referred to is BioWatch. Launched by the Department of Homeland Security in 2003 in the wake of anthrax attacks that killed five Americans following 9/11, the program disseminates detectors of biological agents throughout the country. The program should be replaced with better detectors, George said, but she cautioned the new initiative the Department of Homeland Security (DHS) has in place, Biodetection 21, or BD21, as not adequate technology.

Jennifer Rakeman, assistant commissioner and director of the Public Health Laboratory at the Department of Health and Mental Hygiene in New York City, told the committee the detection of agents by national agencies falls short.

"You can't approach biological agents and the detection of biological agents the same way as you do radiological and chemical," Rakeman said, adding that a biological agent must be detected among a mix of other biological material found in the environment, both good and bad.

The experts agreed one better way to replace the BioWatch system, which takes up to 36 hours to confirm that a biological agent is present, would be to provide portable sampling units that offer faster turnaround times. This may mean partnering with the private sector to develop the technology for the government. The panelists said the technology exists but that it doesn't yet meet the gold standard.

And even when state-of-the-art technology is being deployed for detection, it may be technology used for a military setting and not appropriate for an urban center like New York City, Rakeman added.

“Again, it’s a technology that’s being pushed on locals without any input,” she said.

Local public health departments are sometimes invisible when it comes to the process of adopting new technologies, the panelists agreed. This was the argument Umair Shah, executive director of Public Health for Harris County, Texas, made before the committee.

“There’s a science and an art to public health just as in medicine and we must have access and availability to as much information as possible to make decisions,” Shah said. “This means that federal, state and local partners must plan together today in order to protect our communities more effectively for tomorrow... Ultimately a biodetection hit must be a shared one involving local decision-makers and responders, front and center. This means federal, state and local partners must work together as do public health and emergency management, law enforcement, and health care delivery. Ultimately we are all part of the same team and our communities expect it.”

U.S. Rep. Peter King (R-NY) repeated those sentiments.

“It’s imperative that our communities are well-positioned to detect, protect, and decontaminate biological warfare agents. As the sophistication of biological weaponry improves, we must be ready,” King said.

<https://homelandprepnews.com/countermeasures/38238-experts-testify-united-states-is-underprepared-for-bioterrorism-threats/>

[Return to top](#)

US ARMS CONTROL

VOA (Washington, D.C.)

North Korean Leader Kim Jong Un Signals He’s Ready for ‘New Way,’ Experts Say

By Christy Lee

Oct. 19, 2019

North Korean leader Kim Jong Un most likely stands at a crossroads, trying to decide whether to test long-range ballistic missiles and nuclear weapons in a bid to force concessions from the U.S., an action that could trigger harsher measures by the U.S., according to experts.

“I am convinced that the North Koreans are preparing to escalate their ballistic missile testing and/or nuclear-related activities in ways that will test whether the United States is prepared to respond,” said Evans Revere, a former State Department official who had negotiated with North Korea extensively.

“We should prepare ourselves for the possibility that the North Koreans will try something more ambitious in the coming weeks,” he continued.

Setting the stage

After seeking sanctions relief from the U.S. for nearly a year since the failed Hanoi Summit with President Donald Trump in February, Kim may now consider pursuing other options he warned of in his New Year’s Day speech, according to Robert Manning, a senior fellow at the Atlantic Council.

“He is setting the stage for pursuing an alternative — when he concludes he cannot get what he wants from Trump,” Manning said.

In his New Year’s Day speech, Kim said if the U.S. “persists in imposing sanctions and pressure” against North Korea, it “may be compelled to find a new way.”

In April, Kim gave the U.S. until the end of the year to make a “bold decision.”

While testing a series of short-range missiles this summer, North Korea said it will seek a new road unless the U.S. changes its approach.

North Korean delegations walked out of the working-level talks held in Stockholm earlier this month, chastising the U.S. for the failed talks because it “has not discarded its old stance and attitude.”

In the first official statement by the U.S. since the breakdown of the Stockholm talks, Randall Shriver, assistant secretary for defense for Indo-Pacific Security Affairs said Tuesday the U.S. will maintain pressure on North Korea because it is necessary to induce the country to “come to the table with a particular mindset.” He also urged China to strengthen enforcing sanctions on North Korea.

Mount Paektu significance

On Wednesday, North Korea’s official state media released pictures of Kim riding on a white horse on Mount Paektu, a place Kim is known to visit before making a big decision. According to the Korean Central News Agency (KCNA), officials accompanying him were convinced Kim will plan “a great operation to strike the world with wonder again.”

Joshua Pollack, a North Korean expert at the Middlebury Institute of International Studies in California said Kim’s horseback ride on Mount Paektu “suggests that no sanctions relief is anticipated” by North Korea.

North Korea will probably “redouble their efforts to evade or undercut international sanctions,” he added.

Ken Gause, director of the Adversary Analytics Program at CNA, said, “The fact that Kim’s on a white horse on Paektu means he’s made a really big decision.” He continued, “I suspect that this is laying the propaganda framework or groundwork for what will eventually be an announced decision on what North Korea is going to do next.”

Pollack expects Kim to announce a new direction in policy in his New Year’s Day speech next year.

Until then, Kim may keep the door open for a potential engagement with the U.S., according to experts, in the event Trump decides to change his mind and grant sanctions relief.

Breaking off talks

Experts said Kim’s main priority in engaging with the U.S. is for sanctions relief.

“While the current array of sanctions does not threaten the existence of the regime, the burden of sanctions is substantial and is impeding economic development and modernization,” Revere said. “He must find a way to get rid of sanctions. He is most likely to do this by ratcheting up tension with the United States.”

Kim pointed out Wednesday while visiting township construction sites in Samjiyon County that “the situation of the country is difficult owing to the ceaseless sanctions and pressure by the hostile forces,” according KCNA.

If Kim sees no hope for progress in diplomatic talks with the U.S., he may eventually break off engagement with the U.S, an action that could trigger the U.S. to consider taking tougher measures under its maximum pressure policy, according to Joseph Bosco, an East Asia expert at the Institute for Core-America Studies (ICAS) who served at the office of the secretary of defense.

“If he seriously breaks off discussions, I think that would be a real mistake on his part because I think he will then force the Trump administration to go back to the maximum pressure campaign, which is much more than sanctions,” Bosco said.

Two other pieces of the maximum pressure policy, according to Bosco, are credible use of force and threatening the legitimacy of Kim’s regime.

“If there is perceived to be an imminent danger to the United States or its allies because of North Korean actions with nuclear weapons and missiles or other hostile actions, I think the use of force would be certainly on the table,” Bosco said. “There are things that can be done to further question the legitimacy of Kim regime,” he continued.

David Stilwell, assistant secretary of state for East Asia and Pacific Affairs, said on Wednesday that the U.S. is “trying to reassure [North Korea’s] security interest” while seeking denuclearization talks.

Turning to China, Russia

Other options North Korea may consider while testing weapons is to forge stronger alliances with China and Russia that could further relax enforcing sanctions on North Korea.

“China and Russia are probably willing to ease up on sanctions enforcement to allow North Korea if they so choose to lean in that direction to get some amount of support from China and Russia who are looking to do anything they can to weaken the U.S. position in Asia,” Gause said.

Bosco said, “Because of the Syria experience, it’s incumbent upon the Trump administration to make very clear that our alliance commitments in Asia Indo-Pacific are as strong as ever.”

<https://www.voanews.com/east-asia-pacific/north-korean-leader-kim-jong-un-signals-hes-ready-new-way-experts-say>

[Return to top](#)

COMMENTARY

Inside Higher Ed (Washington, D.C.)

The Bomb in College Classrooms

By Sarah Bidgood

Oct. 14, 2019

Millions of high school graduates recently packed their bags and headed off to their first year on college campuses across the country. To mark the occasion, everyone, from The New York Times to world-weary upperclassmen, offered tips for making the most out of the next four years. Their suggestions revealed less for their insights than for what they tell us about each person's own undergraduate experience. It's clear that, for many, college was the place where they found their passion and that this discovery enabled them to make a difference in the world once they left.

As someone who works as a nonproliferation researcher, I have some specific hopes for how this might play out for the Class of 2023. I spend my days looking for ways to prevent the spread of weapons of mass destruction and devising recommendations for how we can do this more effectively. It's certainly one of the most difficult moments for this work in recent memory. Between the crisis in U.S.-Russia relations, the unraveling of arms control and the growing potential for nuclear conflict around the world, most of us have been working overtime to keep up. And there's no end in sight.

In fact, so much work must be done, and the stakes for failure are so high, that it simply won't be possible to do it all alone. We need more creative ideas, more questioning minds and more outspoken voices to help prevent a global catastrophe. Instead, my field is facing a personnel crisis that is making us less effective at grappling with these and other international security challenges.

By 2023, for example, nearly 40 percent of the employees at the National Nuclear Security Administration will be eligible to retire. In 2029, the same will be true for 80 percent of the U.S. State Department's senior civil servants. The number of people taking the foreign service exam is at its lowest point in years.

Against this backdrop, we should be concerned that most current college students will graduate without any formal introduction to weapons of mass destruction and their means of control.

That was the central takeaway from a recent study I authored on how nonproliferation and disarmament of weapons of mass destruction are taught to undergraduates in the United States. To understand this landscape, I combed through hundreds of course catalogs and surveyed faculty members from 75 of the top-ranked public, private and military institutions in the country. I looked for classes that were offered sometime between 2016 and 2018 and that touched upon nuclear, chemical or biological weapons. After countless hours of searching, I found only 524 courses that met these criteria.

That number may sound like a lot to some people. What it means, however, is that each of those 75 institutions offered an average of just seven such courses during the two-year period in question. For comparison, the nation's three leading public, private and liberal arts institutions each offered as many as 19 to 30 courses that covered climate change during just the 2017-18 academic year alone. Given that climate change and weapons of mass destruction both threaten humanity's survivability, why are they taught at such discrepant levels to the generation whose responsibility they will become?

Much more can be done to empower students to address the challenges posed by weapons of mass destruction, and a first step should be ensuring that they have access to courses that focus on these topics -- regardless of institution they attend. Colleges and universities have significant room for improvement, considering that public universities offered fewer WMD-related courses than private ones during the period of my study. Because first-generation college students and students of color disproportionately attend public institutions, they had even fewer opportunities to discover these topics than their counterparts at private institutions.

This disparity is problematic, considering that our field already has very little diversity. What's more, since we know that homogeneous groups generate worse outcomes than those with more diverse members, this imbalance also makes us less effective in our jobs. From this vantage, ensuring that a broader population of students has the chance to pursue careers in the field is not only fair but also, quite literally, a matter of international security.

Fortunately, American colleges and universities are well positioned to be agents of change in this process. With buy-in from both faculty members and administrators, institutions could take a number of steps to substantially improve the situation. Those include offering interdisciplinary first-year seminars that encourage incoming students to explore issues related to weapons of mass destruction from different perspectives. They could also entail inviting nonproliferation experts to address faculty members and students at campuses that convene regular common hours or convocations. Another option would be to develop cross-disciplinary nonproliferation-focused courses that bring in expertise from the hard sciences, humanities and social science. Such efforts, while certainly not without cost, would go a long way toward helping all students engage substantively with these critical issues in ways that they can't today.

Individual faculty members can also take small steps that could have an immediate impact without requiring broader institutional support. The most obvious would be to introduce units on weapons of mass destruction into undergraduate classes that already exist. In a course on Stalinist history, that might mean a week on the Soviet atomic bomb program. In an introductory biology class, it could mean a debate over the possible proliferation implications of gene-editing technologies. For students who are learning skills that fall under the digital humanities, this may entail looking at satellite imagery for evidence of a failed missile launch. These small encounters won't be enough to enact major change, but they may be the only chance such students have to engage with such issues during their four-year college career.

Think tanks, research institutions and nongovernmental organizations can do more to support these efforts, too. Compiling a database of diverse experts who are available to guest lecture in undergraduate classrooms could be especially useful in this endeavor. Another would be offering development workshops for faculty members who want to introduce specific nonproliferation topics into their courses. A third could be providing reading lists, class materials and handouts for faculty members to use in developing a nonproliferation-related syllabus. Those activities would help to ensure that any college or university can introduce their students to these topics, even if they don't have the in-house expertise to do it all themselves.

These recommendations on their own won't be enough to create greater sustainability in my field or to solve the big problems that are keeping me and my colleagues up at night. They will, however, lead to more discussions about these issues within higher education -- and that could pave the way for more substantial and far-reaching efforts to get students thinking about careers in this domain.

I hope at least some of the members of the Class of 2023 discover that WMD nonproliferation, disarmament and arms control are their passions. These are areas where we're still going to need a lot of their help four years from now.

Bio

Sarah Bidgood is the director of the Eurasia Nonproliferation Program at the James Martin Center for Nonproliferation Studies in Monterey, Calif. She also directs the center's Young Women in Nonproliferation Initiative.

<https://www.insidehighered.com/views/2019/10/14/colleges-arent-adequately-teaching-students-about-weapons-mass-destruction-opinion>

[Return to top](#)

Bulletin of the Atomic Scientists (Chicago, Illinois)

Don't Be Surprised When South Korea Wants Nuclear Weapons

By Byong-Chul Lee

Oct. 23, 2019

There are two major variables that factor into South Korea's calculus on starting a nuclear weapons program: the feasibility of North Korea abandoning its nuclear weapons voluntarily, and the guarantee of America's extended deterrence in the event of the nuclear crisis on the peninsula. Both are trending in the wrong direction.

North Korea's intermittent nuclear threats have increasingly weighed on the minds of the broader public in South Korea, and South Koreans have started to suspect that there's no ray of hope left for the complete denuclearization of North Korea. "Denuclearization is the dying wish of Kim Il-sung, the founder of the regime," South Koreans have heard countless North Koreans say. But the North's assertion that the founder's dying wish is still operative is at best disingenuous and at worst an outright lie. In hindsight, denuclearization was dead on arrival.

Unsurprisingly, a growing chorus of voices in South Korea has given up on the rosy fantasy of disarming Kim Jong-un and is instead calling for arming the "Land of the Morning Calm" with destructive nuclear weapons. A September 2017 Gallup poll found 60 percent of South Koreans support nuclear armament, while only 35 percent are opposed. Though the public is anxiously waiting to see if North Korea will strike a deal with the Trump administration, few remain optimistic.

While many decision makers still believe that the best course is to rely on the extended deterrence provided by the United States nuclear umbrella, a growing number are quietly contemplating the alternatives. During a recent speech at the Center for Strategic and International Studies in Washington, former South Korean Foreign Minister Song Min-soon said that "the Republic of Korea taking its own measures to create a nuclear balance on the peninsula" was a "widely touted" option. Such a statement is strong evidence of just how far moderate proponents of nonproliferation have shifted.

The reason for this shift is that today, South Koreans cast a much more doubtful eye toward the United States security guarantee than ever. In particular, more conservatives, who are traditionally reliably US-friendly, do not hide their uneasiness about President Trump. Many were offended when, at a rally earlier this year, Trump brought up the issue of the burden-sharing arrangement for US personnel in South Korea and mocked that, "[i]t was easier to get a billion dollars from South Korea than to get \$114.13 from a rent-controlled apartment in Brooklyn."

More offensive, though, is that Trump has conspicuously tolerated North Korean missile tests that directly threaten South Korea, which hosts the third-largest contingent of overseas US troops as

well as a US anti-ballistic missile defense system and is one of the world's biggest buyers of US arms. The more Trump brags about the letters from Kim Jong-un, the more he alienates an ally. Even moderate South Koreans see Trump's approach to the alliance as extremely petty and bigoted. In sum, his flagrant disregard for the traditional alliance undermines the credibility of extended deterrence and has made South Koreans pessimistic about their continued dependence upon the United States.

Many Americans, even in the administration, know all of this. In September, US Special Representative for North Korea Stephen Biegun rhetorically asked, "at what point will voices in South Korea or Japan and elsewhere in Asia begin to ask if they need to be considering their own nuclear capabilities?" Unfortunately, though, little is being done to assuage South Korean concerns.

If these trends continue, a nuclear South Korea is a question of "when," not "if."

Of course, the path to a nuclear weapon would not be free of obstacles. South Korea, as the only country in the region that has never attacked any other neighboring countries, is a staunch defender of nonproliferation norms. Many pundits in academic and security policy circles as well as high ranking officials in government still fret about the feasibility of pursuing an independent nuclear deterrent. Few security analysts think it would be possible for any president to successfully pursue a such a politically dangerous path within the span of a five-year term.

There would be international pressure too. Global and bilateral nonproliferation instruments such as the Treaty on the Non-Proliferation of Nuclear Weapons, the Comprehensive Nuclear-Test-Ban Treaty, the 1992 Joint Declaration of the Denuclearization of the Korean Peninsula, and the 2015 US–Republic of Korea Nuclear Cooperation Agreement strictly prevent the Seoul government from going nuclear. In short, South Korea is restrained not only by a powerful nuclear taboo but also by the International Atomic Energy Agency's water-tight monitoring presence.

Even if acquiring them is infeasible for now, support for nuclear weapons is more and more in fashion. South Korean policy elites understand that the country is fundamentally responsible for ensuring its own security in an anarchic world. If the United States and the world want to prevent South Korea from starting a nuclear weapons program, it is essential that Washington work toward a nuclear freeze in North Korea and reaffirm its commitment to the bilateral alliance.

Dr. Byong-Chul Lee is formerly the special assistant to the Speaker of the Republic of Korea for unification affairs and currently assistant professor at Kyungnam University's Institute for Far Eastern Studies....

<https://thebulletin.org/2019/10/dont-be-surprised-when-south-korea-wants-nuclear-weapons/>

[Return to top](#)

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

A Cheaper Nuclear Sponge

By Steve Fetter and Kingston Reif

Oct. 18, 2019

“With today’s technology, land-based [ballistic] missiles are an embarrassment,” the late, great strategist Thomas Schelling wrote in 1987. The weapons, he added, “seem to give the entire deterrent a bad name.”

Schelling was right: Intercontinental ballistic missiles (ICBMs) are by far the least valuable leg of the so-called nuclear triad, which also consists of submarine-launched ballistic missiles, and air-delivered cruise missiles and gravity bombs.

So long as U.S. adversaries possess nuclear weapons, we believe the United States should maintain a safe, secure, and effective nuclear arsenal to deter nuclear attacks against itself and its allies. But the Trump administration’s approach to sustaining and upgrading the arsenal is unnecessary, unsustainable, and unsafe. Nowhere is this more evident than with respect to its plan to build a new ICBM.

Instead of proceeding with current plans to build an entirely new ICBM system at a cost that is likely to exceed \$100 billion, the Pentagon could save scores of billions — without sacrificing U.S. security — by continuing to rely on a smaller number of existing Minuteman III missiles.

A New ICBM

The U.S. Air Force currently deploys about 400 single-warhead Minuteman III ICBMs at three locations: F.E. Warren Air Force Base, Wyoming; Malmstrom Air Force Base, Montana; and Minot Air Force Base, North Dakota. The Air Force also maintains 50 extra missile silos in a “warm” reserve status, meaning the silos no longer contain ICBMs.

The Minuteman III was designed in the 1960s and entered service in the 1960s and 1970s. But the missile today is the product of decades of continuous enhancement. The Pentagon last conducted a major upgrade of the missile in the early 2000s, spending over \$7 billion to keep it reliable through 2030. This effort has resulted in expanded targeting options and improved accuracy and survivability.

The Air Force is aiming to replace the Minuteman III missile and its supporting launch control facilities and command-and-control infrastructure. The plan, which began under the Obama administration, is to purchase 666 new missiles, 400 of which would be operationally deployed through 2070. The remaining missiles would be used for test flights and as spares. The service is seeking to make significant capability upgrades as part of the recapitalization program, known as the ground-based strategic deterrent.

The program is off to a rocky start. The Air Force initially estimated the cost of the new ICBM program at \$62 billion, but the Pentagon in August 2016 set the estimated acquisition cost at \$85 billion — at the lower end of an independent Pentagon cost estimate that put the price tag as high as \$150 billion. The Defense Department completed another independent cost estimate of the program in June, but has yet to disclose whether the projected cost has changed. A price tag of over \$100 billion would make it one of the Pentagon’s costliest planned acquisition programs.

Citing concerns about the need for and ability to execute the ground-based strategic deterrent program as planned, the fiscal year 2020 National Defense Authorization Act (NDAA) and defense appropriations bill passed by the Democratic-led House this summer eliminated the Pentagon’s funding request to proceed to the main development phase of the program.

Both bills also halved the funding request to replace the W78 ICBM warhead — one of two ICBM warheads — and reduced the Energy Department's request to expand the production of plutonium pits in support of the warhead replacement program. In contrast, the Republican-led Senate provided additional funding above the Air Force's request for the new ICBM program and supporting efforts, setting up a clash between the two chambers on the issue as they work to reconcile their versions of the defense authorization and appropriations bills in the coming weeks.

Meanwhile, Boeing announced in July that it would not bid on the contract for the ground-based strategic deterrent program. Boeing's exit leaves Northrop Grumman as the only company competing for the contract. Boeing subsequently proposed to team up with Northrop, but Northrop has so far refused to do so. If the Pentagon moves ahead with a single bidder, it would have less leverage to control costs. There is no precedent for the absence of competition for a contract the size of the ground-based strategic deterrent program.

The Least Valuable Leg

The primary mission of the land-based leg of the nuclear triad is to deter a nuclear attack by presenting an adversary, namely Russia, with a large number of targets — 450 missile silos — that would have to be destroyed if Russia is to have any hope of limiting damage to its own country. Another rationale is that the land-based missiles act as a tripwire, forcing an adversary to attack the U.S. homeland directly, all but assuring an American response with nuclear weapons. In other words, ICBMs purportedly keep the United States safe by their ability to serve as a “warhead sponge,” absorbing a massive Russian nuclear attack. An additional rationale for the ICBM force is that it serves as a backstop to an unforeseen, and unlikely, future vulnerability in the submarine leg.

The disadvantages of silo-based ICBMs, however, are significant. The missiles cannot survive a large-scale Russian nuclear attack unless they are launched during the less than 30 minutes between the detection of the Russian missile attack and the arrival of those warheads at their targets. Under current U.S. policy, ICBMs are postured to allow “launch under attack,” meaning the president would have to make a quick decision, in less than 10 minutes, about whether to launch U.S. ICBMs before they are destroyed. This could lead the president to order the use of nuclear weapons based on inaccurate or incomplete information. False warnings of nuclear attack have occurred in the past; fortunately, all were identified as false before a presidential decision was required. A false warning during a crisis — particularly during a military conflict with Russia — would be particularly dangerous.

Being ready to launch ICBMs on attack is not only dangerous, it's pointless. Even if a Russian attack eliminated all U.S. ICBMs, the remaining force of ballistic missile submarines at sea and those long-range bombers that had been alerted and dispersed before the attack would be more than sufficient to deliver a devastating retaliatory blow. And if, as is commonly assumed, most U.S. ICBMs are targeted against Russian nuclear forces, those Russian forces would be launched on warning of the U.S. retaliatory attack — if they had not already been launched as part of the initial attack.

ICBMs do not provide unique capabilities. The sea leg of the triad is more survivable and the air leg is more flexible. Unlike bombers, ICBMs cannot be recalled after launch or used to signal resolve (e.g., by dispersing or deploying them to forward bases). Moreover, the assumption that land-based missiles are the fastest means of delivering nuclear weapons is false. A 1993 report by the Government Accountability Office found “no operationally meaningful difference in time to target” between the ICBMs and submarine-launched ballistic missiles. Furthermore, to use ICBMs against targets in China or North Korea, the missiles would have to fly over Russia. This targeting inflexibility problem greatly diminishes the utility of ICBMs outside a nuclear conflict with Russia, because overflying Russia to attack other states risks nuclear retaliation from Russia.

Eliminating ICBMs would, it is true, reduce the number of aimpoints an adversary would have to strike to destroy the smaller number of delivery systems based at submarine and bomber bases on U.S. soil. ICBM proponents argue that without the ICBMs, Russia or China might be tempted to launch a limited attack against the small number of remaining targets.

But that argument ignores the eight or so undetectable ballistic missile submarines (SSBNs) that are always at sea, which together carry more than 700 warheads, a number that in a crisis could be increased even further. So long as submarines and their supporting command-and-control infrastructure remain invulnerable, why would Russia risk attacking the U.S. homeland with nuclear weapons when at least 700 U.S. warheads would remain at sea to respond? Indeed, deterrence would be strengthened if the 400 warheads currently deployed on vulnerable ICBMs were replaced by additional warheads deployed on submarines. This could be done by deploying an average of six warheads on each Trident D5 submarine-launched ballistic missile instead of the four to five currently planned. Prior to the Obama administration, Trident D5s carried an average of about six warheads, and many of the warheads removed since then are maintained in reserve for possible redeployment.

According to the Trump administration's 2018 Nuclear Posture Review, "When on patrol, SSBNs are, at present, virtually undetectable, and there are no known, near-term credible threats to the survivability of the SSBN force." But if an unforeseen breakthrough in anti-submarine warfare were to emerge, silo-based ICBMs would not provide a reliable hedge given their vulnerability. This has led some to suggest the development of a mobile basing mode to enhance the survivability of ICBMs. In fact, the Nuclear Posture Review suggests the Pentagon might consider a mobile basing mode. But such an approach would be far more expensive than even the already pricey ground-based strategic deterrent program, which will retain silo basing, and would likely be a political nonstarter.

A Lower-Cost Alternative

Given the many weaknesses of ICBMs, a good case can be made to eliminate them entirely. But even if one agrees with the sponge, tripwire, and hedge rationales for ICBMs, spending over \$100 billion to buy a new ICBM force is unnecessary. These functions can be performed at lower numbers and by deferring the development of a new ICBM, which would free up funds to help pay for other priorities.

The budget challenges facing the Defense Department are real as it attempts to execute the 2018 National Defense Strategy and reorient the military toward great-power competition with Russia and China. On nuclear modernization, the estimated cost of the Trump administration's plans is staggering and growing. The Congressional Budget Office earlier this year projected the cost to maintain and replace the arsenal over the next decade at nearly \$500 billion, after including the effects of inflation. This is an increase of nearly \$100 billion, or about 23 percent, above the already enormous projected cost as of the end of the Obama administration. Over the next 30 years, the price tag is likely to top \$1.5 trillion and could approach \$2 trillion.

These big nuclear bills are coming due as the Defense Department is seeking to replace large portions of its conventional forces and must contend with internal fiscal pressures, such as rising maintenance and operations costs. In addition, external fiscal pressures, such as the growing national debt, are likely to limit the growth of — and perhaps reduce — military spending. "We're going to have enormous pressure on reducing the debt which means that defense spending—I'd like to tell you it's going to keep going up—[but] I'm not terribly optimistic," Alan Shaffer, deputy undersecretary of defense for acquisition and sustainment, said in February 2019.

Supporters of the Trump administration's Nuclear Posture Review argue that even at its peak, spending on nuclear weapons will consume no more than 6 to 7 percent of total Pentagon spending. But even 6 percent of a budget as large as the Pentagon's is an enormous amount of money. By comparison, the March 2013 congressionally mandated sequester reduced national defense spending (minus exempt military personnel accounts) by 7 percent. Military leaders and lawmakers repeatedly described the sequester as devastating.

The Congressional Budget Office projected in 2017 that \$17.5 billion (in 2017 dollars) could be saved between fiscal years 2017 and 2046 by delaying development of a new ICBM by 20 years and instead further extending the life of the Minuteman III by buying new engines and new guidance systems for the missiles and replacing the missile's command-and-control infrastructure as planned. Crucially, this approach would save \$37 billion through fiscal year 2036 when the vast majority of nuclear recapitalization spending is scheduled to take place. Such savings on their own won't solve the massive budget challenge facing the Pentagon, but they are far from trivial. The Air Force has to contend with the high cost of several other priorities over the next two decades on which money slated for the ground-based strategic deterrent could be spent, including the F-35, B-21, and new tanker programs.

The Pentagon argues that a new ICBM is necessary because the fleet of 400 deployed Minuteman III missiles is aging into obsolescence and losing its capability to penetrate adversary missile defenses. According to the Nuclear Posture Review, the life of the Minuteman III "cannot be extended further" and the missile "will have increasing difficulty penetrating future adversary defenses."

As the Congressional Budget Office notes, extending the life of the Minuteman III could entail some technical risk. But a 2014 Air Force analysis of alternatives to sustain the ICBM leg of the triad did not determine that extending the life of the Minuteman III is infeasible. Likewise, Lt. Gen. Richard Clark, the Air Force's deputy chief of staff for strategic deterrence and nuclear integration, told the House Armed Services Committee in March 2019 that while the missile's propulsion and guidance systems are aging, there is still one more opportunity to extend their life before a new missile is needed.

The Air Force's 2014 analysis found that the price to build and operate a new missile system would be roughly the same as the cost to maintain the Minuteman III. Pentagon officials have repeatedly touted this conclusion in making the case against extending the life of the missile. But the service arrived at this conclusion by comparing the total life-cycle cost of each option through 2075. This meant that the Minuteman III life-extension option included the costs of both refurbishing the existing missiles and the costs of building a new fleet of replacement missiles. The analysis of alternatives also assumed a need to deploy 450 missiles.

In contrast, the Congressional Budget Office evaluated the cost of the two options over a shorter period of time. Furthermore, a 2014 report by the RAND Corporation on the future of the ICBM force found that "any new ICBM alternative will very likely cost almost two times — and perhaps even three times — more than incremental modernization of the current Minuteman III system." The report said continuing to maintain the Minuteman III through life-extension programs and "gradual upgrades is a relatively inexpensive way to retain current ICBM capabilities."

The RAND study identified two challenges to this approach. First, the number of Minuteman III missile bodies is declining due to test launches. Based on the current testing pace of four to five tests per year, maintaining a force of 400 missiles, as is the plan under New START, would exhaust the test inventory by 2035. Second, the report said incremental modernization would be viable only if the capability the Minuteman III provides "is not substantially changed."

Reducing the number of ICBMs to 300 and forgoing capability upgrades would mitigate these challenges while allowing the ICBM force to continue to serve its sponge, tripwire, and hedge functions. Life-extended Minuteman III missiles can be destroyed in their silos by incoming Russian warheads less expensively than new missiles produced under the ground-based strategic deterrent program. A force of 300 ICBMs would match the number of deployed Russian ICBMs and reduce by only 100 the total of 1,550 deployed strategic warheads the United States is planning to deploy under New START. If the nation believes it essential to field those 100 warheads, an additional eight submarine-launched ballistic missile warheads could be deployed among the 20 missiles carried by each of the 12 deployed ballistic missile submarines.

Reducing the size of the ICBM force could free up additional savings by allowing for the reconsideration of current ICBM warhead requirements. Current plans call for replacing both the W78 and W87 ICBM warheads and developing the capability to produce at least 80 plutonium pits per year by 2030. A smaller ICBM force should prompt scrutiny of whether it is necessary to maintain two different warhead types. The urgency of the requirement to produce so many pits, which a recent independent report determined would be “extremely challenging,” is driven in large part by the ambitious scope of the plans to replace the W78 ICBM warhead.

The claim that the Minuteman III may not be able to overcome expected advances in adversary missile defenses over the next two decades is unconvincing. There is a sizable inventory of countermeasures the missile is already believed to contain to overcome such defenses. Given the shortcomings of U.S. missile defenses against ICBMs despite a mammoth investment, what have Moscow and Beijing discovered about intercepting large numbers of ICBMs armed with countermeasures that the Pentagon has not?

Some analysts have argued that another less-expensive alternative to building a new ICBM would be for the Defense Department to place life-extended Trident D5 submarine-launched ballistic missiles on land in existing ICBM silos. The Trident D5 has been successfully tested 176 times and is the most reliable ballistic missile the United States has ever deployed. The life-extended version of the missile is expected to remain in service through the early 2040s and its range exceeds that of the Minuteman III. Although Trident D5 is larger than Minuteman III, it is smaller than the retired Peacekeeper ICBM, which was deployed in Minuteman silos and which, like Trident D5, was cold-launched from a canister.

Deploying submarine-launched ballistic missiles on land would require the purchase of additional missiles (the Navy has purchased 533 Trident D5 missiles to date), but this would still be less expensive than developing and buying a new ICBM, particularly since the life-extended Trident D5 production line remains open. In addition, deploying Trident D5 on land would allow for the consideration of a common replacement for both missiles beginning roughly a decade from now when the Navy is planning to start development of a new submarine-launched ballistic missile thereby obviating the need for the ground-based strategic deterrent program.

The Air Force and Navy completed in early 2016 a joint assessment of pursuing “full commonality” between the sea and land legs of the triad. The study determined that using the Trident D5 to replace the Minuteman III would not work due to “unique operating environments, nuclear surety features and mission requirements.” The most significant issue with Trident D5 is its use of a high-energy propellant and the arrangement of warheads around the third stage, which creates the possibility of plutonium-dispersal accidents, even with warheads incorporating insensitive high explosive. This could be addressed by designing a new third stage using lower-energy propellant.

An Even Lower-Cost Alternative

An even less expensive approach would be to keep the Minuteman III past its expiration date in the early 2030s, which would delay, if not obviate, the need to refurbish the rocket motors.

The Air Force estimates the operational lifetime of ICBM motors using highly conservative methods. During the first decade or so after production, a relatively small number of motors are destructively tested and various physical, chemical, and mechanical properties are measured. Statistical models are fit to these data and used to predict the motor age when these properties will exceed specifications or thresholds that have been determined for motor reliability. Because the data are limited, there are large uncertainties and a lower boundary for the motor age is selected as the service life.

The useful life of the motors can be longer — in some cases, much longer. We know this because motors retired from active service in the ICBM force are transferred to the Rocket Systems Launch Program for use in test and space launch vehicles, where they have proved highly reliable many years beyond their service life. For example, the Air Force estimated the service life of the Minuteman II Stage 3 motor to be only 13.5 years, but the motor performed successfully in 60 of 64 RSLP launches (and all 34 static tests) conducted 25 to 40 years after production — two to three times the estimated service life.

This suggests that an independent evaluation of the methods used by the Air Force to determine service life is warranted. First-principles physics- and chemistry-based models may give more accurate estimates than statistical models based on limited data. Better still, the Air Force could develop methods to nondestructively measure motor properties. This would permit the lifetime of each motor to be estimated on an individual basis. Rather than retire all motors at an age when a small percentage are believed to be no longer reliable, only those particular motors with measurements indicating unacceptable aging could be retired.

A draft version of the House NDAA would have required an independent study on the benefits, risks, and estimated cost savings of extending the life of the Minuteman III through 2050 and delaying the ground-based strategic deterrent program. The study would have required analyses “of incorporating sensors and nondestructive testing methods and technologies,” the “methods used to estimate the operational service life of Minuteman II and Minuteman III motors,” and “alternative methods of estimating the operational service life of Minuteman III motors.”

But the provision was stripped out during the House Armed Services Committee’s markup of the bill in June. While opponents argued that the Air Force has already conducted several studies of extending the Minuteman III, to our knowledge the kind of assessments called for in the original bill have not been undertaken.

An amendment to restore the study on the House floor failed by a vote of 164–264. Several congressional aides told us that Northrop Grumman aggressively lobbied against the amendment. If the contractor is convinced that a new missile is the only option, why would it oppose a study that, if the contractor is correct, would presumably validate the need for a new missile?

There’s Still Time for a Smarter Approach

The United States is planning to spend hundreds of billions of dollars over the next two decades to rebuild its nuclear arsenal. At the end of the process, the arsenal will look like the one the country has today, and will last another 50 years. But the spending plans face significant budgetary, programmatic, and political challenges. There’s a better way. It is not too late to pursue a different path. Now is the time to re-evaluate nuclear weapons spending plans before the largest investments are made.

The Minuteman III can be sustained beyond the missile’s expected retirement in the 2030 timeframe. Pursuing this approach would defer a decision on whether to build a costly new missile,

freeing up billions to spend on other, higher priority Pentagon modernization programs. And doing so would still allow the ICBM force to provide the purported deterrent benefits that it provides today.

Steve Fetter is a professor in the School of Public Policy at the University of Maryland. He served for five years in the White House Office of Science and Technology during the Obama Administration, where he led the energy and environment and national security and international affairs divisions. Kingston Reif is the Director for Disarmament and Threat Reduction Policy at the Arms Control Association.

<https://warontherocks.com/2019/10/a-cheaper-nuclear-sponge/>

[Return to top](#)

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."

DISCLAIMER: Opinions, conclusions, and recommendations expressed or implied within are solely those of the authors and do not necessarily represent the views of the Air University, the United States Air Force, the Department of Defense, or any other US government agency.