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Feature Report

“Defense Nuclear Enterprise: Systems Face Sustainment Challenges, and Actions Are Needed to Effectively Monitor Efforts to Improve the Enterprise”. Published by U.S. Government Accountability Office; March 2020

<https://www.gao.gov/assets/710/705525.pdf>

What GAO Found

The Department of Defense (DOD) continues to make progress in implementing recommendations to improve the nuclear enterprise. These recommendations stemmed from DOD’s 2014 internal and independent nuclear enterprise reviews, a U.S. Strategic Command 2014 memorandum, and an internal DOD 2015 report on nuclear command, control, and communications (NC3). Since GAO last reported—in November 2018—an additional five of the 247 subrecommendations from the 2014 reviews have been closed; 91 remain open. In that time, DOD has also closed two more of the 13 recommendations from the 2015 review; six remain open. However, the key tracking tools DOD uses to provide visibility on the status of the recommendations do not provide current and complete information. For example, for those items that are behind schedule, many of the expected completion dates have not been updated to reflect when the items are now expected to be completed. The current DOD guidance for tracking the recommendations’ status does not include a specific requirement to keep the information current in the tracking tools. Until DOD addresses these issues, it will not have a complete and accurate picture of when tasks are expected to be finished, whether progress is being made, whether efforts have stalled, or if there are other challenges. Ensuring that there is current and complete information regarding enduring recommendations would also help inform DOD’s effort to monitor the health of the defense nuclear enterprise.

DOD and the military services are experiencing challenges related to sustainment and maintenance of nuclear weapon systems and have ongoing and planned initiatives intended to mitigate these challenges. All of the systems we reviewed have been operational since before 1998, making these systems at least 22 years old (see figure). The age of the systems has resulted in maintenance and supply issues. For example, the Ohio-class submarine has experienced the failure of parts that were not originally intended to be replaced. DOD and the services have ongoing and planned efforts to mitigate these challenges, such as improving maintenance processes and sources of supply.

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NUCLEAR WEAPONS

Air Force Magazine (Arlington, Va.)

Missile Testing in the GBSD Era

By Rachel S. Cohen

April 1, 2020

VANDENBERG AIR FORCE BASE, Calif.— You see the intercontinental ballistic missile before you hear it. Upon ignition in its underground silo, the horizon blooms bright red-orange, and a ball of light rises west over the Pacific Ocean. A dull roar intensifies as the unarmed nuclear missile jets upward to arc over the moon on its way to the Kwajalein Atoll in the Marshall Islands. Brief sparks mark each time a section of the Minuteman III burns up and falls away. A jagged trail of smoke imprints its path across the sky. The crowd below claps as the missile body separates from its nonnuclear payload and disappears into the dark. It would splash down more than 4,200 miles away, about 30 minutes later.

As these weapons approach 50 years since they were first deployed across the United States, the Air Force is assessing whether its more than 400 Minuteman IIIs can still perform, and is looking ahead to the future Ground-Based Strategic Deterrent (GBSD) missiles that will replace the Minuteman III.

Airmen here test-launched a nonnuclear ICBM at 12:33 a.m. on Feb. 5 to see whether a new fuse in development is working as expected, a test that exemplifies the in-between space the land-based missile enterprise occupies right now. This test was slightly different from the usual assessments by the 576th Flight Test Squadron, which typically focus a few times a year on how boosters are performing. Those operational tests require pulling a weapon from its silo, whether at F.E. Warren Air Force Base, Wyo., Malmstrom Air Force Base, Mo., or Minot Air Force Base, N.D., then bringing it to Vandenberg for launch.

The information gleaned from such tests helps the Air Force tweak procedures and systems, shapes future parts design, and bolsters the war plans of U.S. Strategic Command. “We’re looking at, does it go where it’s supposed to? How accurate is the weapon system?” said 576th FLTS Commander Col. Omar Colbert. “How reliable is the weapon system? How ready are our test procedures? How ready is the crew to do what they’re called upon to do, and how well does everything function?”

Next Up: GBSD

The coming Ground-Based Strategic Deterrent missile has lofty goals: To be modern and digital, but not hackable; to ease the burden on operators, but not cut them out; to bring on a capable new weapon, but not upset the balance of global nuclear deterrence; to spend many billions creating that weapon, but not bankrupt other parts of the federal budget.

But to own an effective deterrent, the United States has to make sure it works—meaning the Pentagon needs to design a new ICBM test regime. The Air Force is in the early stages of that work now.

The GBSD program is slated to include more than 600 intercontinental ballistic missiles with a price tag of \$22 billion for development alone. Northrop Grumman, the lone contractor after Minuteman III manufacturer Boeing halted its bid, is scheduled to start delivering new GBSD missiles in 2029 for underground silos in Montana, North Dakota, Wyoming, Colorado, and Nebraska.

The Air Force Operational Test and Evaluation Center is responsible for testing while GBSD is still in development. The 576th FLTS at Vandenberg, the sole squadron in charge of testing the existing inventory of Minuteman III ICBMs, is still figuring out how it will help with that phase. Traditionally, it would handle operational tests once the weapons are fielded, checking the viability of everything from compatibility with the existing silos to communications with the launch range.

The small cadre of ICBM testers could feel the crunch as GBSD comes online

About 200 people work for the 576th, which spends about \$11 million each year—a number that will have to change in the future, Colbert said.

“We don’t yet know what the new system will look like and what it will require to operate the weapon system,” Colbert said Feb. 3 at Vandenberg.

The unit is responsible for trying out technology upgrades to the Minuteman III that can roll over to the GBSD, such as a fuse modernization program. Airmen are working through a slate of five ICBM improvements worth more than \$3 billion right now, according to a squadron briefing.

Still, vetting GBSD could become a little less strenuous, a little simpler, and somewhat less time-consuming than the Minuteman III, if only because the older weapon needs closer scrutiny. The new missile’s components may be easier to swap out for different test needs as well.

As the Air Force figures out where and how to deploy the missiles, and how many launch control centers and silos to fill, it must also determine what it needs to maintain the weapon system, Colbert said.

The service holds live test launches of unarmed ICBMs at least a few times a year, though the number changes depending on what data officials want to collect. Some launches are intended to measure the reliability of the missile, for example, while others seek to measure the performance of system’s upgrades or of the connection to airborne launch platforms such as the E-4 Nightwatch plane.

Today, ICBM testers spend months planning the movement of an ICBM to Vandenberg from the operational missile wings at Malmstrom, F.E. Warren, and Minot, or from the maintenance depot at Hill AFB, Utah. In each case, they must slowly and carefully transport the missiles across the country, outfit them with test-specific systems to track the weapon’s performance in flight, and load it into a tractor-trailer-like vehicle, which tips the missile into its silo.

That’s on top of the days they log traveling to the Air Force Nuclear Weapons Center, missile fields, and elsewhere to discuss Minuteman III sustainment, test planning, system development, and software with other USAF officials and the companies working on the new designs.

“We’re hoping to streamline and make a lot of those processes a lot more efficient and a lot more effective and a little bit less of a footprint required, as we gain access to new technology,” Colbert said. “Innovation is the key to all of that ... not only with the developmental system, but also with our current system.”

“Innovation” includes automation, something that raises significant concerns for the nuclear enterprise, where safety depends on human input and redundancy, and leaders are more cautious about adopting changes than elsewhere in the force.

Colbert argues automation should play a limited role in the future of nuclear weapons. For instance, algorithms could change the way the U.S. handles targeting and tracking, yet stop short of creating a “dead hand” system that could launch missiles on its own. In testing, automation might mean more efficient ways to display data in control centers, among other places.

“I’d like to think that for nuclear weapons operations, we’ll always have a human hand in that process,” he said. “We don’t want to automate to the [same] extent where you will see within other weapons systems. ... We want to make sure that we have trained, we have certified people ... that we can count on to do the right thing in the right moments, and under authorized orders, from the right authority.”

The nuclear command, control, and communications (NC3) system is getting its own makeover, one that could ideally combine commercial and military-grade systems into a network so complex that adversaries can’t hack it. The GBSD, the first digital-age ICBM, has to talk to that command and control web without fail for successful launches. Future tests could possibly use red teaming to ensure the NC3 network is secure as part of preparation checklists, or enlist “friendly” hackers to look for vulnerabilities in the missile’s software.

Air Force Scientific Advisory Board Chairman James Chow said in 2017 that modern cyber threats change the equation when it comes to nuclear surety. “You cannot ever assure to 100 percent,” he said. So the Air Force needs to judge how much cyber risk it can accept for nuclear systems. Operational tests can show how well that standard holds up in the real world.

Certification also poses challenges for additive manufacturing (also called 3D printing), another emerging technology that could make the GBSD easier to test

Favorably, 3D printing could make it easier to swap out missile parts. The test enterprise already uses additive manufacturing to build training models for maintainers to work on, but introducing that technology into the real thing will be much more challenging.

“We would have to go through a rigorous process to make sure that anything that we produce met our nuclear certification requirements and standards,” Colbert said.

Modern Tech

The Air Force must also overhaul its above-ground command centers with new monitors, workstations, and software.

Jerry Rogers, a flight test analyst at the squadron whose workspace is already upgraded, said the ICBM data experts have been in touch with the GBSD acquirers. With the new system, he said the squadron hopes to increase the amount of data gleaned from a test launch and be able to process more of that information.

GBSD’s upgrades can “probably give us a lot more situational awareness as we fly,” Rogers said. “We’ll see some things that we don’t necessarily see today ... probably a better solution of the exact position and velocity of the vehicle, that type of stuff.”

“We are not going to use any more thermal paper,” he added. (Just a few years ago, the squadron retired thermal paper, an antiquated product that allows for inkless printing.)

Hardware and software that control the missile’s connection function, and other pieces needed for test also have improvements on the horizon.

Others at Vandenberg, in particular, an Airman overseeing weather information at the Western Range Operations Control Center, said he’s got all the data he needs to ensure successful test flights.

As the nuclear enterprise moves further into the 21st century, Air Force Global Strike Command Deputy Commander Lt. Gen. Anthony Cotton said they must consider the possibility that algorithms might replace some Airmen. Around 10,600 people currently work for 20th Air Force at F.E.

Warren, the organization that oversees America’s 400 deployed intercontinental ballistic missiles and related operations daily.

“That could be a possibility. We haven’t gone down that path yet,” Cotton said of a smaller workforce. “How many people does it take to do a task today? And then how many people would it take to do a task tomorrow? We have to recognize that when we say there’s efficiencies, you might see efficiencies in manpower as well.”

The Air Force is waiting on Northrop to decide how many people it would need to run its system before reviewing manpower needs itself. Northrop declined to comment for this story.

Those tasked with guarding, operating, and sustaining ICBMs are supposed to be among the Air Force’s best and brightest, but the field has suffered in recent years, with scandals involving drug use, a test-cheating scandal, mental health issues, and low morale. In response, the Air Force began a public campaign to make those Airmen feel appreciated and improve its workforce.

Global Strike is working to cut the number of Airmen who rotate out of the missile enterprise from 43 percent to 20 percent—hoping that retention will build better leaders and grow institutional knowledge in the ranks.

These days, Colbert said, Global Strike is targeting engineers, scientists, and others with backgrounds that are well-suited to the nuclear mission instead of trying to turn anyone into a missileer or maintainer, whether they had an inherent interest or not.

“It’s a very competent and capable range of folks that we’re getting in now,” he said.

Command leaders want Airmen to learn about their ICBM career options so it might spark a desire to continue growing within the field. Cotton said he’s taken people onto airborne command post planes who had “no idea” they could occupy some of the five positions on those jets.

“I think we’ve done a much better job at doing that now than we did in the past,” he said. “Are we there yet? ... Absolutely not.”

“This is something that you constantly have to have pressure on ... to make sure that we’re going to have the right talent and have everybody ready when we do the transition to GBSD,” he said.

Missileers, who can sit underground for days at a time, hope the GBSD spurs added creature comforts in their control centers. They already have a chef upstairs to feed them, but they’d also like a shower and more workout equipment.

“Any kind of skylight would be nice,” 1st Lt. Claire Waldo, from the 12th Missile Squadron, said before the Feb. 5 test launch.

Airmen have a computer and a television in the capsule, but they can only use one at a time. It’d be great for one person to be able watch a show while the other catches up on work requirements, the 490th Missile Squadron’s 1st Lt. Mitch Nairn said.

Another request: a better, private toilet, instead of an austere one concealed by a curtain next to the workstation.

“It’s pretty much a prison,” Nairn said.

Down in the bunker, the dissonance between current ICBM mission systems and what they could become is tangible. Missileers no longer know what a knob on the dashboard labeled “WAR PLAN” was once used for.

Eight-inch floppy disks that connect the missile system to national decision-makers are retired, but smaller ones are still in place. Giant black folders hold piles of hard-copy instructions and computer screens—primitive by today’s standards—still get the job done.

The Airmen who work on the ICBMs every day were born decades after the first nuclear bombs exploded on Hiroshima and Nagasaki. Nor do most remember the Cold War's "duck- and-cover" drills under school desks or the fear of imminent nuclear destruction. But the possibility that they might one day be called upon to open their lockbox, remove the keys, turn the four switches and keys in sync, and launch a new era in nuclear weapons history—connecting the antiquated system to modern day in another way—is as real to them as the underground control stations they occupy 24 hours a day.

That mindset will carry through to the digital era of the GBSD as well. In the meantime, they'll put up with the dials that no longer matter and the workstation that brings "Dr. Strangelove" to mind. They're doing the best with what they've got, until a new weapon system for a new generation of nuclear experts is in place.

"For deterrence to be credible, you have to announce that, 'Here's our weapon system. It works as we designed, and it still works, even though it is aging,'" Colbert said. "We have the will. We have the intent. We have the training. We have the forces that are able to employ it professionally, safely, and reliably."

As the United States prepares to develop its next-generation nuclear weapon, the question remains whether the GBSD will be tested with or without its warhead, the W87-1. America has only tested a live, operational nuclear weapon once, in 1962 during a submarine-launched ballistic missile event dubbed "Frigate Bird."

The U.S. signed the United Nations' 1996 Comprehensive Nuclear Test Ban Treaty but has yet to ratify the agreement, keeping the door open to future nuclear vetting even though the nation hasn't detonated such a weapon since 1992.

"The United States will not resume nuclear explosive testing unless necessary to ensure the safety and effectiveness of the U.S. nuclear arsenal," stated the 2018 Nuclear Posture Review.

Patty-Jane Geller, a nuclear expert at the Heritage Foundation, believes the U.S. will stick to its moratorium.

Government laboratories have nonnuclear means of checking warheads and missile components for anomalies, Geller noted. But she suggested the U.S. might decide to resume explosive testing if a problem pops up that simulation methods can't help fix, or when creating totally new warheads.

For now, though, she believes the political consensus appears to be in favor of continuing that approach.

"It is essential that U.S. leaders seek and support ways, including actions by the UN Security Council, to reinforce the de facto global nuclear testing moratorium and make it clear that further nuclear testing would be a threat to international peace and security," Arms Control Association Executive Director Daryl Kimball said in 2016 at an event for the treaty's 20-year anniversary.

<https://www.airforcemag.com/article/missile-testing-in-the-gbsd-era/>

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Omaha World-Herald (Omaha, Neb.)

Pentagon Seeks \$76 million Next Year to Start Replacing Offutt-based 'Doomsday' Jets

By Steve Liewer

March 29, 2020

The day is coming when Offutt Air Force Base's giant "Doomsday" planes will fly off into the sunset.

The Air Force has started a program to replace the four E-4B Nightwatch jets — also known as the National Airborne Operations Center — within 10 years. The Doomsday moniker is because their primary mission is to take off and maintain control of nuclear weapons in the event of nuclear war. They also frequently are used as a transport plane for the secretary of defense.

In December, the Air Force posted a notice about the proposed replacement aircraft, which will be called the Survivable Airborne Operations Center, or SAOC. An "industry day" informational session for potential contractors was held in February.

"In case of national emergency or destruction of ground command control centers, the SAOC will provide a highly survivable command, control and communications (C3) platform to direct U.S. forces, execute emergency war orders, and coordinate actions by civil authorities," said the Air Force's notice.

Congress budgeted \$20 million in 2019 and 2020 to begin looking for a replacement for the E-4B and two other types of military aircraft, the E-6B Mercury and the C-32A. The Trump administration is seeking \$76.4 million in its 2021 budget, and is looking to spend more than half a billion dollars over the next five years developing the new plane.

The new planes would start joining the fleet in the late 2020s.

The big, white E-4s have been a familiar sight in Nebraska skies since they were introduced at Offutt in the mid-1970s. They are a military version of the civilian Boeing 747-200, which first flew in 1968. Production ended in 1991, and the last passenger airline retired the model in 2017 (though later versions are still in use).

"They're the oldest 747s in the fleet," said Rep. Don Bacon, R-Neb., who oversaw their operation when he commanded the Offutt-based 55th Wing in 2011-12. "Logistically, it's a real challenge to find spare parts and maintain them."

They're also the Air Force's most expensive planes to operate. The magazine Business Insider calculated in 2016 that the E-4Bs cost just less than \$160,000 an hour to fly. That's almost \$30,000 an hour more than the next-highest, the B-2 Spirit stealth bomber, which is equipped to carry StratCom's nuclear gravity bombs into battle.

In 2017, two E-4Bs were damaged when a tornado struck the Offutt flight line. Both were stored in a hangar at the time, but with their tails exposed. The tails, which stand six stories high, acted like giant sails and moved the planes inside the building. The planes sustained a combined \$8.3 million worth of damage and were out of service, one for four weeks and the other for eight.

The Navy E-6Bs, although based in Oklahoma City, are also frequently on call at Offutt. Their primary job is to communicate with Trident ballistic-missile submarines through VLF (very low frequency) communications systems, which involve flying in tight circles above the ocean while trailing a 5-mile-long antenna.

The 22 E-6Bs are military versions of the civilian Boeing 707-320. They were the very last of that type built, in the late 1980s.

The six C-32As are Boeing 757-200 narrow-body jetliners configured for use as executive transports for the vice president, first lady and members of the Cabinet. They were built in the late 1990s and are based at Andrews Air Force Base, Maryland.

When they are carrying the vice president, they are called “Air Force Two.”

Despite their age, the E-4Bs are newer and have a better service record than the C-135-variant reconnaissance jets flown by the Offutt-based 55th Wing on critical missions around the world.

Those planes were built in the early 1960s. A 2018 World-Herald investigation showed the C-135-variants had break rates far higher than the E-4Bs.

Only a handful of those aircraft are scheduled to be replaced before the 2040s.

https://www.omaha.com/news/military/pentagon-seeks-million-next-year-to-start-replacing-offutt-based/article_c9fb920b-1ede-5d1c-a750-45d75cc4f9bf.html#1

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Air Force Magazine (Arlington, Va.)

Report: ICBMs to Fall Short of Mission Needs in 2026

By Rachel S. Cohen

March 30, 2020

The Air Force expects to lose confidence in the full viability of its 400 intercontinental ballistic missiles starting in 2026, three years before replacement nuclear missiles start entering the ground, according to a new Government Accountability Office report.

“According to Air Force officials, as a result of the expected attrition of current field assets, the Minuteman III weapon system will be unable to meet full mission requirements after 2026, should full deployment be required,” the March 26 report said. “Continued asset attrition is also affecting the Minuteman III retirement schedule.”

USAF expends a few unarmed ICBMs for testing each year, drawing down the stockpile while the Minuteman III’s replacement, the Ground-Based Strategic Deterrent, will not be fully available until 2036. The ICBM fleet has already lasted 40 years past its intended service life and suffers from parts availability and maintenance workforce issues.

“At the current rate of four to six missiles expended each year, there is not much margin in the inventory for schedule slips in the deployment of GBSD,” Todd Harrison, who runs the Aerospace Security Project at the Center for Strategic and International Studies, told Air Force Magazine in February. “The Air Force may want to consider slowing the Minuteman test rate to 2-3 missiles per year as a hedge to make sure we don’t drop below 400 missiles in the inventory before GBSD replacements come online.”

Harrison in 2017 forecasted an eight-year dip in the inventory below 400 missiles from fiscal 2032 to 2039 if the GBSD program is delayed for three years without extending the life of existing ICBMs. He suggested the Pentagon could add more nuclear-capable bombers into operations to offset the temporary reduction.

To keep its 1970s-era nuclear weapons in better shape for longer, the Air Force has recently formalized parts of its ICBM maintenance process and plans to refurbish 57 launch facilities a year for eight years. It is also moving toward predictive maintenance to judge the health of its nuclear systems and determine when parts need to be replaced.

“Challenges at these facilities include corrosion, water intrusion, collapsed conduits, misaligned doors, and bulging walls,” the report adds. “The need to sustain nuclear support equipment is reflected in a nuclear enterprise review recommendation to prioritize nuclear support and test equipment.”

GAO’s report is following up on studies from 2014 and 2015 that looked at nuclear enterprise leadership, investments, policy, organization, and more. The watchdog says the Defense Department still needs to address 91 of 247 recommendations from the 2014 reviews and six of 13 recommendations from the 2015 review. DOD agreed to update its information about when certain items are on track to be completed.

“The current DOD guidance for tracking the recommendations’ status does not include a specific requirement to keep the information current in the tracking tools,” GAO said. “Until DOD addresses these issues, it will not have a complete and accurate picture of when tasks are expected to be finished, whether progress is being made, whether efforts have stalled, or if there are other challenges. Ensuring that there is current and complete information regarding enduring recommendations would also help inform DOD’s effort to monitor the health of the defense nuclear enterprise.”

<https://www.airforcemag.com/report-icbms-to-fall-short-of-mission-needs-in-2026/>

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Santa Fe New Mexican (Santa Fe, N.M.)

New Study Says LANL Nuclear Pit Production Could Go Higher

By Scott Wyland

March 27, 2020

Los Alamos National Laboratory should be able to produce 80 plutonium pits to meet surges in demand, not just the official goal of 30 pits a year, according to a proposed update to the lab’s last sitewide analysis.

Defense plans call for the lab to produce 30 pits — the grapefruit-sized explosive centers in nuclear warheads — in 2026 and the Savannah River Site to manufacture 50 in 2030. Various documents allude to creating “surge capacity” or the ability to go beyond the normal volume for short periods, but the draft supplement to the lab’s 2008 sitewide review is the first to make 80 pits the goal for production surges.

The National Nuclear Security Administration, which is taking public comments on the draft supplement until April 24, cautioned against making too much of the numbers.

The agency is focused on getting the lab to the 30-pits-per-year goal in the next six years and has no current plans to install the needed equipment to make 80 pits, although such upgrades could happen in the future, agency spokeswoman Toni Chiri said. She added that surge capacity offers greater flexibility to make more pits if “absolutely necessary.”

“Just because we have the capability to do 80 pits doesn’t mean we will be doing 80,” Chiri said. “It’s impossible to predict what will happen in 10 years.”

The 80-pit surge capacity is based on the 2008 study mentioning 80 pits per year as the limit of what the lab could produce, Chiri said. The Savannah River Site also would have some surge capacity, she added.

Critics have expressed doubt about the lab, with a history of safety problems at its aging plutonium facility, being able to produce even 30 nuclear cores.

“They don’t need to do 80 and can’t possibly do 80,” said Greg Mello, executive director of the nonprofit Los Alamos Study Group. “What is the most likely scenario is LANL’s great ambitions will collide with intractable problems — and calls for more and more money to fix the problems.”

Mello said he thinks part of the reason the agency wants the lab able to make 80 pits is in the event the Savannah River Site’s pit plant doesn’t work out as planned.

Defense officials say the new pits are needed to modernize the nation’s nuclear arsenal to better protect the U.S. against Russia, China, North Korea, Iran and rogue states that are improving their weaponry. The pits would arm two new warheads on intercontinental ballistic missiles — one type that’s land-based and the other launched from submarines.

New Mexico Sen. Tom Udall has said he would prefer the lab be the sole pit producer, so the state doesn’t have to take the radioactive waste generated at Savannah River without the job creation and other economic benefits. However, Udall has never made clear whether he wanted the lab to crank out 80 pits.

Neither Udall nor Sen. Martin Heinrich, who also supports pit production at LANL, responded to questions emailed to their offices about what they deemed a realistic volume.

Jay Coghlan, executive director of Nuclear Watch New Mexico, said he doubted the lab has the “expertise and competence” to produce 80 plutonium pits.

“But they’re going to eat up taxpayers’ money,” Coghlan said.

The push to ramp up LANL’s pit production to such a high level is all the more reason the Energy Department should do a new sitewide environmental analysis, Coghlan said. If the agency uses both LANL and Savannah River, it should do a full, “programmatic” study that looks at the impacts from two or more sites, he said.

The Energy Department contends a supplemental statement for LANL is enough because the environmental impacts of pit production are largely the same now as 12 years ago.

Coghlan said he’s also concerned about defense leaders refusing to use the thousands of pits stockpiled during the Cold War and instead favoring new, heavily modified pits. That raises the question of whether the Pentagon might resume nuclear testing on these untried cores instead of computer simulations, Coghlan said.

Another watchdog group thinks there’s a good chance the lab could wind up as the sole pit producer, or at least the primary site.

The federal government has yet to come up with a solid plan on how it will convert Savannah River’s stalled mixed-oxide plant to a pit factory, said Tom Clements, executive director of SRS Watch.

While spending almost \$8 billion to build the failed mixed-oxide facility, the Energy Department installed faulty central-air systems, piping and structures, which all would have to be overhauled, Clements said.

And unlike LANL, Savannah River has no experience producing nuclear cores, he said.

“I’ve seen no evidence they can pull it off,” Clements said.

https://www.santafenewmexican.com/news/local_news/new-study-says-lanl-nuclear-pit-production-could-go-higher/article_3e39bea8-6a1b-11ea-bb6e-93cdeb54791f.html

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US COUNTER-WMD

Washington Examiner (Washington, D.C.)

Fears of Biological Warfare Linger, While Experts Say Coronaviruses Cannot Be Controlled

By Abraham Mahshie

March 31, 2020

The novel coronavirus is not an ideal biological warfare agent, experts say, because its impact on the United States and adversaries alike cannot be controlled. But China refuses to help the world answer questions about its origin.

“Coronavirus would be a bad candidate to be a bioweapon,” said Thomas Spoehr, head of the Center for National Defense at the Heritage Foundation, who was the U.S. Army’s senior-most officer for chemical and biological weapons during his 36-year military career.

“I love conspiracy theories,” Spoehr admitted to the Washington Examiner, but he said doctors he has spoken to called the coronavirus “a wimp, you know, if you just hit it with a little bit of Purell, it's gonna die.”

The former lieutenant general said biological weapons must have high-lethality to be effective.

“A good bioweapon would be something like anthrax, where you would get 80% of those exposed to it would die,” he said.

Spoehr said during the first Gulf War, the Army took Iraq’s biological warfare threat very seriously, developing detectors that would discover biological agents in the air and fielding vaccines to keep troops safe.

After 9/11, he said, the entire perimeter of the Pentagon was outfitted with bio detectors looking for anthrax and other harmful agents.

Another reason why he said coronavirus would not be an effective weapon is that it cannot be controlled.

“It's always nice if your side has the antidote or the vaccine,” he said. “The coronavirus as a bioweapon doesn't make great sense to me, nor that any country that didn't have an effective treatment would allow it to get out of confinement.”

In a March 24 press briefing, Defense Secretary Mark Esper downplayed the idea that adversaries could be taking advantage of the coronavirus to harm U.S. national interests.

“How does this change the international security environment? Clearly, what we see are countries are turning inward right now,” he said. “They're looking very closely at their own internal affairs, how they treat and deal with the coronavirus, its spread.”

Army Gen. Robert Abrams, commander of United States Forces Korea, told reporters during a March 13 briefing that he did not believe North Korea was using the virus as a biological weapon.

“There are no indications of any, sort of, attempts by North Korea to inject some sort of biological weapons or anything like that,” he said. “It is a closed-off nation, so we can't say emphatically that they have cases, but we're fairly certain they do.”

Bill Gertz, a national security expert who authored *Deceiving the Sky: Inside Communist China's Drive for Global Supremacy*, told the *Washington Examiner* that the biological warfare theory is fiction, but China does have some important questions to answer.

"No one knows the origin of the coronavirus," he said, but he noted that China was studying bat and insect viruses and working on their vaccines.

Gertz said following the SARS coronavirus outbreak in 2003, China invested heavily in research on viruses, including isolating 2,000 new viruses and studying bat coronaviruses.

"China, on top of that, has not made public what kind of research that it has done with [those] coronaviruses," he said. "They've studied bat viruses. Okay. Do we know whether they've studied this bat virus? We don't know that."

Gertz said China's Wuhan Institute of Virology initially offered to send samples of the new coronavirus to the U.S. for study.

"But yet they never followed through on that," he said. "So, that's another data point for their failure to provide data and information about the virus."

Gertz said conspiracy theories that make a case for the coronavirus as a biological weapon fail to take into account the nature of the communist system in China.

"The communist system, its priority is first and foremost, not to protect the Chinese people but to protect the Communist Party of China," he said. "Anything that reflects poorly on the Communist Party of China is driving whatever reaction, response, cover-up, dissembling, disinformation on the part of the Chinese government."

Gertz said his discussions with former Army doctors involved in biological weapons research at Fort Detrick reinforce the idea that coronaviruses are not appropriate for warfare because they are difficult to control.

The use of coronavirus does, however, fit the case for "unrestricted warfare" that Gertz writes about in his book.

"China has adopted what two People's Liberation Army colonels referred to as unrestricted warfare, which mentions using all forms of warfare, whether it's biological warfare, economic warfare, financial warfare," he said.

But the economic repercussions on the global economy, including China, make that case far-fetched.

"I don't think they want to destroy the economy to the point where it would impact their modernization program," he said.

"Whether the Chinese would favor that, of course, they wouldn't say publicly, but they've tried to use other means to limit our ability," he said. "We don't really know what the impact has been in China."

<https://www.washingtonexaminer.com/policy/defense-national-security/fears-of-biological-warfare-linger-while-experts-say-coronaviruses-cannot-be-controlled>

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Seapower (Arlington, Va.)

Raytheon, MDA Sign \$2 Billion Standard Missile-3 Contract

By Seapower

March 31, 2020

TUCSON, Ariz. — Raytheon Co. will produce and deliver SM-3 Block IB interceptors under a \$2.1 billion, multiyear U.S. Missile Defense Agency contract, the company said in a release. The deal is the first multiyear contract for the SM-3 program and covers fiscal years 2019–2023.

SM-3 is the only ballistic missile interceptor that can be launched on land and at sea. It is deployed worldwide and has achieved more than 30 exo-atmospheric intercepts against ballistic missile targets.

“This procurement deal is a win-win for government and industry,” said Mitch Stevison, Raytheon Strategic and Naval Systems’ vice president. “Efficiencies gained from this contract will allow us to reduce costs, continue to improve the SM-3 and deliver an important capability to our military.”

The Block IB variant achieved full-rate production in 2017. The company has delivered more than 400 SM-3 rounds over the lifetime of the program.

<https://seapowermagazine.org/raytheon-mda-sign-2-billion-standard-missile-3-contract/>

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US ARMS CONTROL

NC State University (Raleigh, N.C.)

Bricks Can Act as ‘Cameras’ for Characterizing Past Presence of Radioactive Materials

By Matt Shipman

March 26, 2020

Researchers from North Carolina State University have developed a new technique for determining the historical location and distribution of radioactive materials, such as weapons grade plutonium. The technique may allow them to use common building materials, such as bricks, as a three-dimensional “camera,” relying on residual gamma radiation signatures to take a snapshot of radioactive materials even after they’ve been removed from a location.

“This research builds on our previous work, which was an empirical demonstration that we could turn a brick into a gamma ray spectrometer – characterizing the energy distribution of a radiation source,” says Robert Hayes, an associate professor of nuclear engineering at NC State and first author of a paper on the work.

“Our new work effectively shows that we could take an array of bricks and turn them into a gamma ray camera, characterizing the location and distribution of a radiation source,” Hayes says. “Although this time we did not use bricks, instead relying on commercial dosimeters, since it’s a proof of concept study. Also, the radiation source we imaged this time was 4.5 kilograms of weapons grade plutonium, whereas we previously used a commercial americium source for the spectrometry demonstration. In this most recent study, we were able to rather accurately predict not only the location of the weapons grade plutonium, but even the radius of the source, just with passive dosimeters.

“Even though we used commercial dosimeters here, our findings strongly suggest that we could do the same using building materials, such as brick,” Hayes says. “That’s because the silicates in brick – such as quartz, feldspars, zircons, and so on – are all individual dosimeters. It is a tedious process to remove those grains from the brick for measurements, but we have done it multiple times. For the goals of this new research, it wasn’t necessary to use brick – we’ve already shown we can do that. This was simply a question of determining how much information we could glean from this approach. And the answer is that we could learn a lot – about the size and shape of the radiation source, as well as the nature of the radioactive material itself.”

“This ability for three-dimensional imaging is a novel capability, meaning we can basically see into history in terms of what nuclear material was where or when,” says Ryan O’Mara, a Ph.D. student at NC State and coauthor of the work.

The paper, “Retrospective characterization of special nuclear material in time and space,” is published in the journal *Radiation Measurements*.

This work was funded in part by federal grant NRC-HQ-84-14-G-0059 from the Nuclear Regulatory Commission; and through a joint faculty appointment between North Carolina State University and Oak Ridge National Laboratory in coordination with the Office of Defense Nuclear Nonproliferation of the National Nuclear Security Administration sponsored Consortium for Nonproliferation Enabling Capabilities under Award Number DE-NA0002576.

Note to Editors: The study abstract follows.

“Retrospective characterization of special nuclear material in time and space”

Authors: Robert B. Hayes and Ryan P. O’Mara, North Carolina State University

Published: March 13, *Radiation Measurements*

DOI: 10.1016/j.radmeas.2020.106301

Abstract: A 4.5 kg sphere of α -phase plutonium was subjected to passive imaging using optically stimulated luminescence dosimetry techniques via inverse square modeling under cylindrical symmetry. The results showed angular resolution in the localization capability close to 1° due to axial resolution below 1 cm. Radial resolution was much worse having an offset of 16 cm using only point source geometry estimates for the commercial dosimeters. Using MCNP™ to reconstruct the profile demonstrated a substantial improvement in reconstructing the relative response as opposed to assuming simple point source geometry. From this, an inverse solving approach known as DRAM was used to estimate source distribution in addition to location. These results are considered regarding their implications for nuclear nonproliferation to the extent they demonstrate potential to determine whether illicit nuclear material had historically been kept in any specific location or alternatively, whether such materials had not been kept in a location they were claimed to have been stored. Having measured the materials location and knowing the integrated measurement time then allows estimating amount of material via dose (or alternatively, knowing the assay could give storage time estimates).

<https://news.ncsu.edu/2020/03/brick-camera-radioactive/>

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Arms Control Today (Washington, D.C.)

Russia's View on Nuclear Arms Control: An Interview With Ambassador Anatoly Antonov

By ACT

April 2020

Arms Control Today conducted a written interview in early March with Anatoly Antonov, Russian ambassador to the United States on issues including the current status of U.S.-Russian strategic security talks, the future of New START, talks on intermediate-range missile systems, engaging China in arms control, and President Vladimir Putin's proposal for a summit of the leaders of the five permanent members of the UN Security Council.

Antonov was appointed ambassador to the United States in August 2017. For more than three decades, he has served in the Soviet Ministry of Foreign Affairs and its successor, the Russian Ministry of Foreign Affairs, where he has specialized in the control of nuclear, chemical, and biological weapons. Serving as the ministry's director for security and disarmament, he headed Russia's delegation to the 2009 negotiations on the New Strategic Arms Reduction Treaty (New START). He was appointed deputy minister of defense in 2011 and deputy minister of foreign affairs in 2016.

Arms Control Today: What issues were discussed in the recent U.S.-Russian strategic security talks in Vienna? When do the two sides plan to meet next? Does Russia find this dialogue on issues affecting strategic stability useful and, if so, why?

Amb. Anatoly Antonov: Russia and the United States are the largest nuclear weapons powers and permanent members of the UN Security Council. They bear a special responsibility for preserving world peace and security. That is why it is crucial to maintain the bilateral strategic stability dialogue at any given circumstance, regardless of political situation. It goes without saying that such engagement should be conducted on a regular basis.

While discussing security issues, one must keep in mind that any conversation, no matter how substantial it might be, should focus on achieving tangible results. Reaching agreements on reducing tensions and mutually acceptable arms control solutions could help meet this goal. The primary task is to rebuild confidence in this area, attempt to preserve treaties that are still in effect, [and] mitigate crisis dynamic.

As for the consultations in January, our reaction can be described as "cautious optimism." On the bright side is the fact that the meeting did take place, even though it exposed serious disagreements between our countries on a number of topics. Without going into detail, I must note that on many occasions we heard our partners talking about a concept of conducting dialogue within the framework of the so-called great power competition. In our view, such a formula could hardly serve as a foundation for building constructive cooperation on security issues between nuclear powers.

Nonetheless, Russian and American negotiators managed to discuss factors that significantly impact strategic stability (even though our partners somehow prefer the term "strategic security"). In our perspective, they include, above all, deployment of global missile defense, implementation of the "prompt strike" concept, threat of placement of weapons in outer space and designation of space as a "war-fighting domain," quantitative and qualitative imbalances in conventional arms in Europe, development and deployment of low-yield nuclear warheads, and adoption of new doctrines that lead to lowering the threshold of using nuclear weapons.

In our view, another positive outcome of the renewed Russian-U.S. dialogue on strategic stability was the agreement reached in Vienna on conducting expert group discussions on specific topics, which we have to go over and agree on.

ACT: Do you agree or disagree with the idea that there is ample time to decide whether to extend the New Strategic Arms Reduction Treaty (New START)? From Moscow's view, when must the presidents of the United States and Russia formally agree on extension of New START to ensure completion of the necessary processes before its expiration date? Is it Russia's view that the treaty can only be extended once, or can it be extended multiple times totaling up to five years if the two parties decide to pursue that approach?

Is it possible for the Duma to provisionally recognize a joint decision by the two presidents to extend the treaty in order to allow a decision on extension closer to the expiration date?

Antonov: As you have correctly noted, Russian President Vladimir Putin clearly spelled out our stance on New START. On December 5, 2019, he declared our country's readiness to immediately and unconditionally extend the treaty. Later last year, we officially suggested that Russia and the United States should review the entire set of corresponding issues including the term of the treaty's possible extension (up to five years).

However, we have yet to get a response. Trump administration representatives keep claiming that "there is still time" since the extension of the treaty in their view can be formalized in a matter of days. These statements are made despite our repeated clarifications that New START's extension is not a "mere technicality," but a rather extensive process that requires the Russian side to undertake a series of domestic legislative procedures. I would like to reiterate that as past similar review processes show, it may take several months to complete the New START extension.

Therefore, it is surprising that the U.S. Department of State refused to conduct consultations proposed by the Russian side on legal aspects of potential extension of the treaty. In response, we hear mixed comments (for instance, during the briefing of a "senior State Department official" on March 9, 2020) on the nature of interaction between the executive and legislative branches in Russia.

As for your last question, I would rather not contemplate in a conditional tense. I wish to emphasize: Russia stands ready to reach an agreement on New START's extension even this very day. However, our goodwill is not enough. It requires U.S. consent, which we have not received yet. Should Washington agree, we will immediately begin implementation of the corresponding domestic procedures.

We hope that the United States will finalize its stance on New START in the nearest future since there is not much time left before the treaty expires in February 2021.

ACT: For nearly a year, the United States has insisted that China be involved in trilateral nuclear arms control negotiations with Russia and the United States. Chinese officials have said, however, that given the disparities between their arsenal and those of the United States and Russia, they are not interested in trilateral arms control talks at this time. Russia has said that if the U.S. side can persuade China to participate, then other nuclear-armed states such as France and the United Kingdom should be involved.

In Russia's view, which nuclear arms issues and which types of weapons should be part of any bilateral or multilateral follow-on negotiation to New START? Would Russia be willing to engage in negotiations designed to limit or reduce stockpiles of nonstrategic nuclear weapons as well as strategic nuclear weapons? When, in Russia's view, should any such New START follow-on talks begin?

Antonov: I would like to remind you that our stance on this issue dates back to 2010. We have said more than once that, with the signing of New START, any possibilities for further reduction and limitation of strategic offensive arms on a bilateral basis are virtually exhausted and that further progress in this area will require involvement of other states with military nuclear capabilities.

However, we do not understand why some of our U.S. colleagues talk exclusively about China. Let's also involve NATO members possessing nuclear weapons, Great Britain and France. In fact, that is what the special representative of the president for nuclear nonproliferation, Ambassador Jeffrey Eberhardt, suggested in his March interview with your journal, when he said, "we have to move beyond bilateral discussions between ourselves and Russia and bring in other countries."

We are convinced that cooperation with third countries in developing possible new agreements in this area should be strictly consensus based and pose no threats to legitimate security interests of the parties. Beijing has clearly rejected the idea of being involved in the so-called trilateral agreements on nuclear arms control that you have mentioned. We believe that this "obsession" with the trilateral format can become a serious obstacle to the development of the Russian-U.S. strategic dialogue, in particular, in terms of preserving existing treaties and developing possible new bilateral agreements.

There is no doubt that the Russian-U.S. bilateral arms control agenda remains relevant. We are open to discussing within the strategic dialogue the issue of the newest and prospective weapons that do not fall under New START. However, the conversation on this topic should be conducted in a comprehensive manner, which takes into account interests of both sides.

At the same time, the possible extension of New START would give Russia and the United States an opportunity to discuss the prospects of bilateral and multilateral arms control regimes in the environment of strategic predictability.

ACT: Regarding your proposal to convene a heads-of-state meeting among the five permanent members of the UN Security Council, what specifically would be discussed at such a meeting, and what specific outcomes does President Putin think could be achieved and how?

Antonov: Currently we have been conducting preliminary discussion on a possible date and venue for the summit.

The goal of the summit, as stated by Russian President Putin, is to begin a substantial conversation on the fundamental principles of cooperation on the international arena in order to resolve the most pressing issues faced by the global community. A meeting of the leaders of the five permanent members of the Security Council is the most appropriate format for such a dialogue to commence.

We proceed from an understanding that the leaders will discuss the crisis situation in global stability and security, including the erosion of the UN-set foundations of the world order, regional conflicts, fight against international terrorism and transnational organized crime, challenges of migration, and destabilizing technologies. We will not be able to leave out disarmament and arms control issues. We hope that the summit will allow us to identify approaches to solving pressing strategic stability issues.

But it can only be achieved within an interested and mutually respectful dialogue that implies consideration of interests of all sides. Later, other countries can and must join these efforts since only collectively we may solve the global problems of humanity. The summit is our proposal to the international community to step away from confrontational thinking and get behind a productive agenda.

ACT: Would Russia's proposal for talks on a moratorium on deploying intermediate-range missiles also prohibit Russian deployment of the 9M729 ground-launched cruise missile, which U.S. and NATO officials have charged as an Intermediate-Range Nuclear Forces Treaty (INF Treaty)-noncompliant system? Which geographic "environments" does the Russian proposal envision becoming nondeployment zones for these prohibited missiles? How would the parties to the agreement monitor and verify compliance or otherwise share information about the locations and

numbers of the prohibited systems? Lastly, is Russia open to considering counterproposals to its initial concept, and with which countries does Russia seek to negotiate such a missile moratorium?

Antonov: Russian President Putin's message to the heads of the leading countries, including the United States and other NATO members, dated September 18, 2019, states that our country made a voluntary commitment not to deploy ground-based intermediate- and shorter-range missiles in Europe and other regions so long as the United States refrains from doing so. On many occasions, we have called on other countries to support this initiative in order to prevent a new missile arms race, primarily on the European continent.

We believe that a multilateral moratorium in accordance with the Russian proposal will require additional verification measures, especially considering that launchers capable of firing intermediate-range land-based missiles are already deployed in Romania (Poland soon will follow suit). It was clearly proven during the test of a sea-based Tomahawk cruise missile fired from a ground-based Mk41 launcher conducted on August 18, 2019. Should our U.S. and European partners be interested, Russia is ready to work out corresponding technical aspects of the verification regime.

As for 9M729 missiles, the alleged "proof" amassed by the United States and NATO of our systems violating the INF Treaty (while it was in effect) has never been presented either to us or the international community.

Russia stands ready to discuss the issues of intermediate- and shorter-range ground-based missiles with all concerned countries. Our call to adhere to a moratorium, similar to the one already observed by our country, is addressed above all to Washington and its allies in Europe and the Asia-Pacific region.

ACT: Regarding the nuclear Nonproliferation Treaty (NPT), what are the main action steps on nuclear disarmament, previously agreed in the 2010 review conference outcome document, or perhaps new steps that Russia will encourage the 10th NPT review conference to support? What specific nuclear risk reduction measures is Russia ready to support in the context of the NPT review conference? [Editor: The 2020 NPT Review Conference will not meet as scheduled, see ACT news article, this issue.]

Antonov: Our stance and priorities in nuclear disarmament have been comprehensively described in the Russian working paper submitted to the second preparatory committee for the 10th NPT review conference. It stipulates a consensus-based incremental approach that implies consistent work on creating the right conditions that help the global community to continue down the path toward nuclear disarmament.

In this regard, we consider the forced development of the Treaty on the Prohibition of Nuclear Weapons (now open for signing) as wrongful. It fails to promote nuclear disarmament, undermines the NPT, and creates additional tensions between its participants. We believe that complete elimination of nuclear weapons is only possible within comprehensive and complete disarmament and under conditions of equal and indivisible security for all, including nuclear states, in accordance with the NPT.

A significant contribution to progress in nuclear disarmament would be made by extending New START and adopting a moratorium on the deployment of ground-based intermediate- and shorter-range missiles by the United States and its allies. An important role in efforts to limit and reduce nuclear weapons is played by the Comprehensive Test Ban Treaty (CTBT). Unfortunately, since the CTBT was opened for signature 20 years ago, the world has still been awaiting its entry into force.

As for nuclear risks, we are working on a joint statement with the other permanent members of the UN Security Council on the inadmissibility of a nuclear war (the United States has failed to respond

to Russia's proposal to do it in a bilateral format). This could in a way become a reconfirmation of the well-known Gorbachev-Reagan formula, this time in a multilateral format.

<https://www.armscontrol.org/act/2020-04/interviews/russias-view-nuclear-arms-control-interview-ambassador-anatoly-antonov>

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Washington Times (Washington, D.C.)

Virus Delays Review of the Nuclear Nonproliferation Treaty

By Edith M. Lederer - Associated Press

March 28, 2020

UNITED NATIONS (AP) - The 191 parties to the Nuclear Nonproliferation Treaty have decided to postpone a conference to review its implementation because of the coronavirus pandemic, the United Nations said Friday.

The treaty is considered the cornerstone of global efforts to prevent the spread of nuclear weapons and the parties hold a major conference every five years to discuss how it is working. The meeting had been scheduled for April 27-May 22 at U.N. headquarters in New York.

U.N. spokesman Stephane Dujarric said the review conference will be held "as soon as the circumstances permit, but no later than April 2021."

The U.N. said earlier this week that the conference was likely to be postponed, but the conference president-designate, Ambassador Gustavo Zlauvinen of Argentina, wanted to consult governments that are parties to the treaty.

The Nuclear Nonproliferation Treaty, which reached its 50th anniversary March 5, is credited with preventing the spread of nuclear weapons to dozens of nations. It has succeeded in doing this via a grand global bargain: Nations without nuclear weapons committed not to acquire them; those with them committed to move toward their elimination; and all endorsed everyone's right to develop peaceful nuclear energy.

The 191 state parties include every nation except India, Pakistan and North Korea, which possess nuclear weapons, and Israel, which is believed to be a nuclear power but has never acknowledged it.

Members try to agree on new approaches to problems, not by updating the treaty, which is difficult, but by trying to adopt a consensus final document calling for steps outside the treaty to advance its goals. That has also proven difficult at recent review conferences,

U.N. disarmament chief Izumi Nakamitsu warned earlier this month that the specter of an unbridled nuclear arms race is threatening the world for the first time since the 1970s, the height of the Cold War between the United States and the former Soviet Union.

She didn't name any countries but she was clearly referring to the United States and Russia, and possibly China, when she told the U.N. Security Council that "relationships between states - especially nuclear-weapon states - are fractured."

"So-called great power competition is the order of the day," Nakamitsu said.

Russia-U.S. relations have been at post-Cold War lows since Moscow's 2014 annexation of Ukraine's Crimea.

Russia and the U.S. clashed at the Security Council meeting where Nakamitsu spoke but they joined in supporting a statement saying the treaty “remains the cornerstone of the nuclear nonproliferation regime and the foundation for the pursuit of nuclear disarmament and the peaceful uses of nuclear energy.”

The council resolved to advance the treaty’s goals and underlined its essential role “in the preservation of international peace, security and stability as well as the ultimate objective of a world without nuclear weapons.”

<https://www.washingtontimes.com/news/2020/mar/28/virus-delays-review-of-the-nuclear-nonproliferatio/>

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Defense News (Washington, D.C.)

North Korea Test Fires Missiles amid Worries about Outbreak

By Hyung-Jin Kim, The Associated Press

March 30, 2020

SEOUL, South Korea — North Korea on Sunday fired two suspected ballistic missiles into the sea, South Korea and Japan said, continuing a streak of weapons launches that suggests leader Kim Jong Un is trying to strengthen domestic support amid worries about a possible coronavirus outbreak in the country.

South Korea’s Joint Chiefs of Staff said it detected the projectiles flying from the North Korean eastern coastal city of Wonsan into the waters between the Korean Peninsula and Japan on Sunday morning. The projectiles flew about 230 kilometers (143 miles) at a maximum altitude of 30 kilometers (19 miles), the statement said.

The military described the launches as “very inappropriate” at a time when the world is battling the coronavirus outbreak. It urged North Korea to stop such military action.

Japan’s Defense Ministry said that presumed ballistic missiles were believed to have splashed into the sea outside of Japan’s exclusive economic zone.

“Recent repeated firings of ballistic missiles by North Korea is a serious problem to the entire international community including Japan,” a ministry statement said.

In recent weeks, North Korea has fired a slew of missiles and artillery shells into the sea in an apparent effort to upgrade its military capability amid deadlocked nuclear talks with the United States. Those weapons were all short range and capable of striking South Korea, but didn’t pose a direct threat to the U.S. homeland.

Some experts say the latest North Korean launches were likely designed to shore up unity and show that its leader is in control in the face of U.S.-led sanctions and the global pandemic.

Kim “wants to show he rules in a normal way amid the coronavirus (pandemic) and his latest weapons tests were aimed at rallying unity internally, not launching a threat externally,” said Kim Dong-yub, an analyst at Seoul’s Institute for Far Eastern Studies. “North Korea doesn’t have time now to spare for staging (external threats).”

North Korea has been engaged in an intense campaign to prevent the spread of the virus that has infected more than 660,000 worldwide.

It has called its campaign a matter of “national existence” but has steadfastly denied there has been a single virus outbreak on its soil. Many foreign experts question that claim, warning an epidemic in North Korea could be dire because of its chronic lack of medical supplies and poor health care infrastructure.

A week ago, North Korea said U.S. President Donald Trump sent a personal letter to Kim, seeking to maintain good relations and offering cooperation in fighting the outbreak. A North Korean state media dispatch didn't say whether Trump mentioned any of the latest weapons tests by the North.

Kim has vowed to boost internal strength to withstand what he calls “gangster-like” U.S.-led sanctions that are stifling his country's economy. His nuclear diplomacy with Trump faltered after the American president turned down calls for broad sanctions relief in exchange for limited denuclearization during their second summit in Vietnam in early 2009.

North Korea hasn't carried out nuclear or long-range missile tests since it began talks with the United States in 2018. A resumption of a major weapons test by North Korea risks completely disrupting the negotiations.

Associated Press writer Mari Yamaguchi in Tokyo contributed to this report.

<https://www.defensenews.com/training-sim/2020/03/30/north-korea-test-fires-missiles-amid-worries-about-outbreak/>

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COMMENTARY

Bulletin of the Atomic Scientists (Chicago, Illinois)

How to Keep the New Coronavirus from Being Used as a Terrorist Weapon

By Richard Pilch

March 27, 2020

On March 26, CNN reported that US agencies now consider the intentional spread by extremist groups of the coronavirus causing the current pandemic, SARS-CoV-2, to be a growing threat in the United States. The referenced agency documents have not been made public; however, one such Department of Homeland Security (DHS) document is quoted as saying: “Members of extremist groups are encouraging one another to spread the virus, if contracted, to targeted groups through bodily fluids and personal interactions.”

The CNN report seems to contemplate the possibility of US domestic terrorism and “the threat from white supremacist and other extremist groups related to the Covid-19 pandemic.”

Last year, the James Martin Center for Nonproliferation Studies completed a detailed assessment of the risk that Islamist terrorists might use infected humans to spread a contagious disease. Our experts found that Islamist terrorists, and extremist groups more generally, are not bound by ideological or psychosocial norms that prohibit such behavior. In addition, the use of infected humans to spread a contagious disease requires comparatively limited technical know-how. Our experts concluded that such an attack “could prove to be highly lethal to the targeted population(s), provide a low cost weapon, have a traumatic psychological shock value ... undermine a country's public health and medical infrastructure's ability to respond, and erode faith in the government's ability to protect the public.”

In view of this assessment, I believe the possibility that extremist groups may attempt to deliberately spread SARS-CoV-2—the virus causing the current pandemic—should not be ignored. In fact, one of the primary limiting factors to such an attack—recruiting humans willing to infect themselves—does not apply in this case; potential perpetrators would come from the ranks of those already infected with the virus. So we are faced with a genuinely challenging task: preemption.

Preventing pandemic terrorism. The primary means for preventing extremist use of the coronavirus pandemic as a terror tool fall in three general categories: disruption, deterrence, and defense. All three need to be used in a layered approach to reduce the incidence and effects of bioterrorism via coronavirus or a future emerging disease.

Disruption. Interdicting an infected terrorist before he or she reaches a target location or population will require timely and accurate intelligence. US agencies should deploy all means at their disposal to identify indicators of intent in extremist groups, their members, and individuals who may be influenced by those groups. Data sources will include social media posts, electronic communications via email and text, and online communities, chat rooms, and message boards. Intelligence agencies should also direct their surveillance activities toward identifying potential target locations and populations.

Deterrence. In the context of infectious terrorism, criminalization is the primary means of ensuring that perpetrators face severe consequences. The deliberate use of naturally-occurring infectious diseases for political or ideological gain fits the definition of bioterrorism; as such, US criminal legislation applies. This legislation is complex, involving multiple interconnected laws. (Note: the laws are presented here out of chronological order for clarity):

- The Biological Weapons Anti-Terrorism Act of 1989 makes it a federal crime to create, possess, or transfer any biological agent “for use as a weapon”; it is punishable by up to life in prison.
- The Anti-Terrorism and Effective Death Penalty Act of 1996 broadens the purview of the preceding law to include anyone who “attempts, threatens, or conspires” to conduct these activities.
- The Antiterrorism Act of 1990 focuses on international terrorism that is designed to intimidate or coerce a civilian population or government; it is relevant in this case because it was later amended to include domestic terrorism (see below). Punishment may include death.
- The Violent Crime Control and Law Enforcement Act of 1994 amends the Antiterrorism Act of 1990 to specifically include biological agents.
- USA Patriot Act of 2001 amends the Antiterrorism Act of 1990 to include domestic terrorism.

The first two laws in this list establish that any plot to deliberately spread SARS-CoV-2 is a criminal offense punishable by up to life in prison, whether or not the plot is carried out. The subsequent three establish that any such use of a biological agent is a criminal offense punishable by up to the death penalty.

The primary challenge of effective deterrence is attribution. Amid the exploding COVID-19 case load, how can infections of deliberate origin be identified? There are two basic mechanisms for attribution of an infectious attack.

Traditional epidemiology involves contact traceback to determine the who, what, when, where, and how of a given infection. We are now in a phase of the COVID-19 pandemic that government officials are making reference to “community spread,” but that term can be misleading; every case is still connected to another, with the virus spreading from one individual to someone else, primarily by respiratory droplets transmitted from a distance of less than six feet. Community spread simply means that we are unable to specifically identify the who, what, when, where, and how of many cases due to the rate and extent of spread. Even in such a situation, however, epidemiological indicators may suggest a deliberate introduction of disease. Does the affected population have unique characteristics, distinct from the broader population (e.g., religious, ideological, occupational, etc.)? Is the affected population insulated from known COVID-19 cases, whether socially or geographically? Is the affected population otherwise at low risk for infection? “Yes” answers to these questions may warrant further investigation.

Molecular epidemiology involves evaluating the genetic characteristics of an infecting virus to identify similarities and differences versus other circulating viruses. If an infecting virus is markedly dissimilar from other viruses in the same geographic area, it may have been recently introduced by an outside source. All patients with unusual or unclear patterns of exposure based on traditional epidemiology should therefore have their infecting virus sequenced and analyzed to look for such dissimilarities.

Defense. Defense against an infectious disease attack involves a range of measures that reduce vulnerabilities and consequences in potential target populations. If target populations are secured against outsiders, whether through quarantine, geographic barriers, or physical barriers, they become less vulnerable. Appropriate health care capacity, including adequate levels of personal protective equipment, diagnostics, therapeutics, and supportive care, reduce the consequences of attack. And herd immunity in the population, through such means as vaccination, would effectively remove SARS-CoV-2 from consideration as a weapon altogether.

The wisdom of a layered approach. The threat of deliberate spread of SARS-CoV-2 is real, but my colleagues and I believe a layered strategy that includes disruption, deterrence, and defense offers some degree of protection against such an attack. Effective attribution is a major factor in deterrence. Unfortunately, the diligent epidemiological analysis that is required to determine the source of suspected coronavirus attacks is likely to be limited by the human and material resource constraints in the current phase of the pandemic. Nonetheless, we recommend that intelligence gathering efforts and defensive measures be prioritized, both to identify motivated perpetrators and to protect potential target populations to the extent possible.

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<https://thebulletin.org/2020/03/how-to-keep-the-new-coronavirus-from-being-used-as-a-terrorist-weapon/>

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U.S. Naval Institute (Annapolis, Maryland)

Naval Deterrence and Small Wars

By William R. Hawkins

March 2020

The 1899 Hague Peace Conference was the first international gathering of major powers to discuss arms control. It was also notable for bringing together two of the era's greatest naval thinkers, both serving on the delegations of their respective countries: Captain Alfred Thayer Mahan for the United States and Admiral Sir John Fisher for Great Britain. Each took a dim view of the conference, believing that deterrence based on strength was a better guarantee of peace than disarmament. Admiral Fisher made this explicit in the assembly's most dramatic presentation:

The supremacy of the British Navy is the best security for peace in the world. . . . If you rub it in, both at home and abroad, that you are ready for instant war, with every unit of your strength in the first line and waiting to be first in, and hit your enemy in the belly and kick him when he is down, and boil your prisoners in oil (if you take any), and torture his women and children, then people will keep clear of you.

No American officer would feel confident about their future career if they made such a colorful statement today. But such a frank utterance did not slow down Fisher. He was named commander-in-chief of the Mediterranean fleet and later promoted to First Sea Lord in 1904, where he spent the subsequent six years dragging the Royal Navy "kicking and screaming" into the 20th Century. The head of the U.S. delegation at The Hague conference, Andrew Dickson White (both ambassador to Germany and president of Cornell University), found Fisher "very intelligent" and, like Mahan, a breath of fresh air and realism.

Secretary of State John Hay's instructions to the U.S. delegation stressed deterrence rather than disarmament, stating "It is doubtful wars are to be diminished by rendering them less destructive, for it is the plain lesson of history that the periods of peace have been longer protracted as the cost and destructiveness of war have increased." And on the general topic of arms control, Hay doubted "the expediency of restraining the inventive genius of our people in the direction of devising means of defense." On the eve of the second Hague Conference in 1907, President Theodore Roosevelt warned, "We must always remember that it would be a fatal thing for the great free people to reduce themselves to impotence and leave the despotisms and barbarians armed."

Today, the principle of deterrence is reasserting itself as an alternative to the long and seemingly inconclusive small wars the United States and its allies have been waging in the Middle East since the 9/11 attacks. It is alleged the public has grown "war weary" and Presidents Barack Obama and Donald Trump were both elected on the promise of ending these conflicts. The problem has been how to do so without creating power vacuums that enemies will fill, with dire consequences for U.S. interests. In the recent Iran crisis, President Trump sought to preempt an increase in Tehran-backed militia group violence in Iraq by executing a lethal strike against the leader of the Iranian Revolutionary Guards Corps-Quds Force, Major General Qassem Suleimani. Then he sought to deter a wider war by asserting escalation dominance. In language reminiscent of Admiral Fisher, President Trump tweeted, "Let this serve as a WARNING that if Iran strikes any Americans, or American assets, we have targeted 52 Iranian sites (representing the 52 American hostages taken by Iran many years ago), some at a very high level & important to Iran & the Iranian culture, and those targets, and Iran itself, WILL BE HIT VERY FAST AND VERY HARD. The USA wants no more threats!"

The aim of these remarks was not to foment war but to deter it—to ensure peace by threatening unacceptable costs on those who would break the peace. Deterrence became a household word

during the Cold War in regard to nuclear weapons. While many had trouble accepting the idea of “mutual” in the doctrine of “mutually assured destruction,” the aim was to keep the level of violence in check so there would be no escalation to World War III. But, as the opening example demonstrates, the concept predates the nuclear age and was once applied to conventional warfare. It can still apply today in an era of smaller wars.

The term “massive retaliation” may still have value, but its close association with nuclear deterrence confuses the issue when discussing conventional warfare. A better term is “punitive expedition” because it conveys what the United States did during an earlier period of history—inflict significant damage on transgressors. The term “expeditionary” is most often used today to mean any foreign deployment of forces, including prolonged involvement in reconstruction and “transition” efforts associated with nation building. However, in the context of conventional deterrence, it should be understood as a foreign military operation with a narrowly defined objective. Colonel C. E. Caldwell, in his classic 1896 work *Small Wars*, divided such conflicts into three classes: “campaigns of conquest or annexation, campaigns for the suppression of insurrections and lawlessness or the settlement of conquered and annexed territories, and campaigns to wipe out an insult, to avenge a wrong, or to overthrow a dangerous enemy.” Because the United States is not interested in establishing the kind of formal empire common in Caldwell’s day, or even prolonged occupation of overseas lands, only the third class of small wars provides a model to establish conventional deterrence while avoiding getting bogged down in the costly entanglements associated with the first two classes.

The naval service will likely be most often tasked for the missions required by this new strategy. During the April 2018 U.S. attack on Syrian chemical weapons facilities, the bulk of the missiles fired (66 Tomahawk land-attack missiles) were from Navy ships and submarines. Six were fired by the submarine USS John Warner (SSN-785) and seven from the destroyer USS Laboon (DDG-58) in the Mediterranean, 30 from the cruiser USS Monterey (CG-61) in the Red Sea, and 23 from the destroyer USS Higgins (DDG-76) in the Persian Gulf. Two Air Force B-1B Lancer bombers operating from Qatar added 19 missiles to the effort, along with eight from British RAF Tornado GR4 fighters flying from Cyprus and 12 from French Rafale B fighters flying from France. In the earlier April 2017 attack on Syria’s Shayrat airbase, two Navy destroyers—the USS Ross (DDG-71) and USS Porter (DDG-78) conducted the entire strike with 59 Tomahawks launched from the Mediterranean. The mobility of naval forces and the range of their weapons provide an array of options to U.S. leaders while presenting enemies with very few.

However, the scale of operations may not always be at the low end of the spectrum. Carrier strike groups with their heavier offensive weapon loads and fleet defensive capabilities will also be needed. And there will be a role for the Marine Corps as well. To be truly effective in showing U.S. resolve and dishing out punishment on a scale that will deter future attacks, U.S. forces may have to go in on the ground, as Israel has had to do in its struggles with Iranian proxies Hezbollah and Hamas. The adversary’s infrastructure must be destroyed; hidden arsenals located; and leaders tracked down in a more thorough and comprehensive manner than can be accomplished from the air. But the objective is not occupation, and certainly not nation-building. The purpose is just the opposite—punishment for bad behavior on a deterrence-level scale. The Marine Corps would return to their earlier role as raiders rather than infantry.

After the Suleimani strike and limited Iranian ballistic missile response against a U.S. base in Iraq, Iranian Foreign Minister Mohammad Javad Zarif tweeted, “We do not seek escalation or war, but will defend ourselves against any aggression.” But Zarif and Iranian President Hassan Rouhani are considered moderates. Iran is ultimately ruled by theocrats, so rationality will not always prevail. Supreme Leader Ayatollah Ali Khamenei has said the missile attacks were not enough. Iran may shift to its proxy forces to carry out future attacks. Hezbollah leader Hassan Nasrallah said on 12

January, “I believe it is time for the axis of resistance to start working.” The axis is composed of all the militia groups Iran has created across the region.

The United States needs to remain ready to deter further Iranian aggression. That includes maintaining a naval force in the region ready to impose harsh expeditionary measures should Suleimani’s replacement order further attacks against U.S. personnel or interests. Deterrence depends on the credibility of U.S. declarations to do so. It may take additional punitive lessons to prove the point. But these lessons will make others take note and do the math. Deterrence is the return of the doctrine of “peace through strength.”

William R. Hawkins

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<https://www.usni.org/magazines/proceedings/2020/march/naval-deterrence-and-small-wars>

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Defense One (Washington, D.C.)

China is Willing to Negotiate on Nuclear Arms, But Not on Trump’s Terms

By Gregory Kulacki

March 30, 2020

Here are four steps that might bring Beijing to the table.

President Trump announced to the world in a March 5 tweet that he would propose “a bold new trilateral arms control initiative with China and Russia.” China immediately rejected the idea the very next day. It would be wrong, however, to infer that Chinese leaders are opposed to nuclear arms control. They are not. They are just not interested in what Trump appears to be offering.

There are good reasons for China to suspect Trump’s motives. He used China as a scapegoat when withdrawing from the Intermediate Nuclear Forces Treaty, for example, and he may be using this vague new initiative to justify allowing the New START Treaty to expire. China was not a party to either agreement. Walking away from treaties with Russia and blaming China for it is unlikely to encourage Chinese leaders to come to the negotiating table.

Trump premised his announcement of this new initiative with a questionable claim that China will “double the size of its nuclear stockpile” before the end of the decade. That sounds ominous, but in fact China has only about 300 warheads and barely enough plutonium to get to 600. Meanwhile, the United States and Russia each possess more than 6,000 warheads. Any new agreement based on parity among the three states would require steep U.S. and Russian cuts even if China did indeed double its arsenal.

China certainly would welcome major U.S. and Russian reductions. But there is no sign either nation is willing to make them. On the contrary, Trump and President Putin have announced ambitious nuclear modernization programs that dwarf China’s. Since neither of the two countries are planning to reduce their arsenals, it is difficult for Chinese leaders to understand what Trump wants to discuss. Neither the president nor his aides have provided a tentative agenda or cited desired outcomes.

Despite Trump's apparent failure to engage China, if he or his successor wants to bring China to the negotiating table, there is a path to follow. Below are four steps the United States can take to convince Chinese leaders to negotiate on nuclear arms.

Step 1. Pursue International, not Multilateral, Negotiations

There is a marked difference between international and multilateral negotiations, and it matters to China.

Chinese leaders perceive multilateral agreements negotiated by a few powerful nations, including bilateral agreements such as New START, as hegemonic—or dominant—behavior. Since the beginning of the nuclear arms race, China has opposed allowing decisions about nuclear weapons to be made without the participation of non-nuclear weapons states.

Conversely, Chinese leaders see international agreements negotiated in the United Nations, such as the Nuclear Non-Proliferation Treaty, or NPT, and the Comprehensive Test Ban Treaty, or CTBT, as more inclusive and equitable. Their outcomes are more stable.

In the past, Chinese communist leaders were skeptical of international nuclear arms control agreements. They described the Partial Test Ban Treaty as an attempt to “consolidate the nuclear monopoly.” They believed its true motivation was to prevent non-nuclear weapons states, such as China at the time, from joining the nuclear club.

Chinese communist leaders' views on nuclear arms control evolved after their government obtained a seat at the United Nations in 1971. Familiarity with the organization led to a better understanding of how it works, who it represents, and what it does. China joined the NPT in 1992 and signed the CTBT in 1996. The test ban treaty was the first international nuclear arms control agreement China had a hand in writing. It was an empowering experience that made China willing to take the next step and negotiate a Fissile Material Cut-Off Treaty, or FMCT, that would ban the production of uranium and plutonium for use in making nuclear warheads.

The entry into force of the CTBT and the FMCT would prevent China from developing new types of nuclear warheads and producing the fissile material it would need to further expand its small stockpile. Working with China in the United Nations to complete those two treaties is the most effective way a U.S. president can verifiably cap the size and sophistication of China's nuclear arsenal.

Step 2. Accept Mutual Vulnerability

Accepting mutual vulnerability sounds defeatist. But all it means is that no one can win a nuclear arms race. The United States cannot prevent China from being able to retaliate and deliver some number of nuclear weapons if the United States should ever choose to use nuclear weapons first during a war.

Unfortunately, the United States refuses to acknowledge its vulnerability to Chinese nuclear retaliation. From China's point of view, that means the United States is still seeking invulnerability.

China maintains a comparatively small nuclear force. It has about 300 nuclear warheads and enough weapons-grade plutonium to produce several hundred more. The United States has around 6,000 nuclear warheads and enough weapons-grade plutonium to make about 5,000 more. China's small nuclear force encourages U.S. war planners to imagine they could wipe it out at the beginning of an armed conflict.

Chinese war planners calibrate the size of their nuclear arsenal based on their assessment of whether such a disarming first strike is likely. The more the United States appears to invest in

trying, the larger China's numbers will become. U.S. dreams of invulnerability also encourage China to develop less vulnerable nuclear forces, including mobile missiles and submarine-based missiles.

Unlike the former Soviet Union, China is not overly concerned about the huge disparity in nuclear forces. Chinese leaders do not appear to believe a massive U.S. nuclear first strike is likely. But they are very worried about a highly accurate conventional first strike that could threaten China's nuclear weapons. The United States currently deploys very large numbers of precision-guided conventional munitions on China's periphery. As the quantity and quality of those munitions increase, so does the level of China's anxiety about the survival of its nuclear weapons.

This concern encourages China to add to its small nuclear force. At the same time, the Trump administration is increasing the already overwhelmingly superior U.S. nuclear force. If the goal is to stop China from building more nuclear weapons, it would be much more effective, and far less expensive, to look for ways to assure Chinese leaders that unless China uses nuclear weapons first, the United States will not attack China's nuclear forces in the event of war. If the U.S. goal is instead to seek invulnerability to Chinese nuclear retaliation, Chinese leaders will continue to enlarge their arsenal.

Step 3. Take No-First-Use Seriously

China is serious about not using its nuclear weapons first in an armed conflict. In a statement after its first nuclear test in 1964, the Chinese government declared it will "never at any time and under any circumstances be the first to use nuclear weapons." It also stated that China did not develop nuclear weapons because it intends to use them, stating, "China's aim is to break the nuclear monopoly of the nuclear powers and to eliminate nuclear weapons."

That logic is hard for many Americans to understand. But it is the same logic that underpins the Non-Proliferation Treaty. U.S. commentators frequently overlook it, but the NPT requires nuclear weapons states to disarm. The United States and the Soviet Union agreed to eliminate their nuclear weapons because they were afraid many other nations, such as China, would acquire them.

Chinese leaders see no-first-use as prerequisite for elimination. They believe the only legitimate purpose of nuclear weapons is to free a country from the fear of being attacked with nuclear weapons. From China's point of view, any nation that imagines nuclear weapons can be used to fight and win wars can never be genuinely committed to nuclear disarmament.

U.S. officials in successive administrations have not considered China's no-first-use pledge to be credible, and they have spent the last several decades testing China's resolve during bilateral discussions. For example, they have asked what China would do during a war if the United States did something like blow up the Three Gorges Dam, destroy Chinese nuclear power plants, or take out China's nuclear weapons with high-tech conventional bombs. Regardless, China regularly reaffirms its commitment to what it deems a core principle.

China has never required other states to commit to no-first-use as a precondition for negotiations. But a U.S. no-first-use commitment would dramatically alter U.S.-China nuclear relations for the better. It would greatly increase Chinese confidence in U.S. intentions. And it would cost the United States next to nothing, since there is no imaginable circumstance that would require the United States to use nuclear weapons first.

Step 4. Discuss Limits on Missile Defense

When the United States and the Soviet Union finally realized that no one could win a nuclear arms race, they decided to talk. Negotiators quickly discovered that limiting offense was impossible without limiting defense as well, since an effective way to counter defenses is to build more offensive weapons. That is why on the same day President Nixon and Soviet General Secretary

Brezhnev signed the first Strategic Arms Limitation Talks, or SALT, agreement, they also signed the Anti-Ballistic Missile, or ABM, Treaty, which put strict limits on missile defenses. Unfortunately, the Bush administration pulled the United States out of the treaty in 2002.

Limiting missile defense is even more important to China today than it was to the former Soviet Union. The huge disparity between U.S. and Chinese nuclear forces and China's vulnerability to a U.S. conventional first strike make even a marginally effective U.S. missile defense system appear to be a problem because it would be more effective against a small retaliatory strike following a U.S. first strike. It is not unreasonable for Chinese leaders to worry that a U.S. president who believes the United States is protected from Chinese nuclear retaliation might be more willing to risk using nuclear weapons against China first. Investing in more offensive missiles, and new missile types that might defeat the U.S. defense system, are understandable Chinese responses to U.S. missile defense expansion.

There is no existing proposal for international negotiations on missile defense. But there is a proposal in the United Nations for negotiations to prevent an arms race in outer space. Since long-range missile defense interceptors also can be used to attack satellites in orbit, missile defense is a topic that should be discussed in such negotiations. The United States refuses to consider such a treaty despite serious concerns about space security. Some observers think it is because talks at the United Nations on this topic would lead to international discussions on missile defense. The United States should embrace rather than avoid that opportunity. Joining UN discussions on missile defense would significantly increase Chinese confidence in U.S. intentions to negotiate on nuclear weapons.

The Bottom Line

The first two steps listed above are prerequisites for getting China to the nuclear negotiating table. The Chinese leadership's distaste for multilateral rather than international negotiations is deeply rooted in Chinese communist ideology and unlikely to change. And if the United States is unwilling to accept vulnerability to Chinese nuclear retaliation, what is there to discuss? What is the point of negotiating with a more powerful nuclear rival that believes that it is invincible?

The next two steps are not required but are highly recommended. Why does the United States insist on maintaining the option to use nuclear weapons first? It is difficult to imagine an answer that would not undermine Chinese confidence in U.S. intentions. And negotiations that begin with a refusal to discuss the age-old battle between offense and defense are unlikely to get very far. China, despite considerable progress, still sees itself as scientifically and technologically inferior to the United States. Chinese leaders understand that a reliable defense against intercontinental ballistic missiles is still out of reach, but they worry about an unforeseen breakthrough.

China is willing to negotiate on nuclear arms, but the United States cannot expect to dictate the terms. There is no need for what President Trump calls "bold new" initiatives. There already is a formidable set of essential tasks waiting to be addressed. If Trump really wants to do something to avoid a new nuclear arms race, pressing the Senate to ratify the Comprehensive Test Ban Treaty and starting negotiations on the Fissile Material Cut-Off Treaty are two bold initiatives he can accomplish right now.

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<https://www.defenseone.com/ideas/2020/03/china-willing-negotiate-nuclear-arms-not-trumps-terms/164204/?oref=d-river>

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ABOUT THE USAF CSDS

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

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

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

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

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