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Feature Item

"*The New START Treaty: Central Limits and Key Provisions*". Written by Amy Woolf, published by the Congressional Research Service; June 13, 2017

https://fas.org/sgp/crs/nuke/R41219.pdf

The United States and Russia signed the New START Treaty on April 8, 2010. After more than 20 hearings, the U.S. Senate gave its advice and consent to ratification on December 22, 2010, by a vote of 71-26. Both houses of the Russian parliament—the Duma and Federation Council— approved the treaty in late January 2011, and it entered into force on February 5, 2011, after Secretary of State Clinton and Foreign Minister Lavrov exchanged the instruments of ratification.

New START provides the parties with 7 years to reduce their forces, and will remain in force for a total of 10 years. It limits each side to no more than 800 deployed and nondeployed land-based intercontinental ballistic missile (ICBM) and submarine-launched ballistic missile (SLBM) launchers and deployed and nondeployed heavy bombers equipped to carry nuclear armaments. Within that total, each side can retain no more than 700 deployed ICBMs, deployed SLBMs, and deployed heavy bombers equipped to carry nuclear armaments. The treaty also limits each side to no more than 1,550 deployed warheads; those are the actual number of warheads on deployed ICBMs and SLBMs, and one warhead for each deployed heavy bomber.

New START contains detailed definitions and counting rules that will help the parties calculate the number of warheads that count under the treaty limits. Moreover, the delivery vehicles and their warheads will count under the treaty limits until they are converted or eliminated according to the provisions described in the treaty's Protocol. These provisions are far less demanding than those in the original START Treaty and will provide the United States and Russia with far more flexibility in determining how to reduce their forces to meet the treaty limits.

The monitoring and verification regime in the New START Treaty is less costly and complex than the regime in START. Like START, though, it contains detailed definitions of items limited by the treaty; provisions governing the use of national technical means (NTM) to gather data on each side's forces and activities; an extensive database that identifies the numbers, types, and locations of items limited by the treaty; provisions requiring notifications about items limited by the treaty; and inspections allowing the parties to confirm information shared during data exchanges.

New START does not limit current or planned U.S. missile defense programs. It does ban the conversion of ICBM and SLBM launchers to launchers for missile defense interceptors, but the United States never intended to pursue such conversions when deploying missile defense interceptors. Under New START, the United States can deploy conventional warheads on its ballistic missiles, but these will count under the treaty limit on nuclear warheads. The United States may deploy a small number of these systems during the time that New START is in force.

The Obama Administration and outside analysts argued that New START strengthens strategic stability and enhances U.S. national security. Critics, however, questioned whether the treaty serves U.S. national security interests, as Russia was likely to reduce its forces with or without an arms control agreement and because the United States and Russia no longer need arms control treaties to manage their relationship. While the Trump Administration has not offered an official assessment of the treaty, Secretary of State-designate Tillerson offered support during his confirmation hearings, noting that he supports "the long-standing bipartisan policy of engaging with Russia and other nuclear arms states to verifiably reduce nuclear stockpiles" and that it is important for the United States "to stay engaged with Russia [and] hold them accountable to commitments made under the New START."

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US NUCLEAR WEAPONS

Public Radio International (Minneapolis, MN)

Can a Nuclear Explosion Be Peaceful? US Scientists Used to Think So.

By Daniel Gross

July 11, 2017

Fifty-five years ago this month, Milo Nordyke was staring out at the Nevada desert, waiting for a huge explosion to blow a hole in the surface of the earth.

The blast was known as Sedan, and it was one of two dozen nuclear explosions that American scientists set off for non-military purposes. It was 1962, a year when most people feared the destructive power of nuclear bombs.

But Nordyke and his colleagues believed that bombs had the power not only to destroy, but also to create. Let's say you wanted to build a harbor or pit mine. One nuclear bomb could do the work of hundreds of bulldozers — or millions of sticks of dynamite.

"We were talking about major projects, like a Panama Canal," Nordyke said. "So we said, 'Let's do a 100-kiloton explosion." That's six times the explosive power unleashed in 1945 on Hiroshima, Japan.

Nordyke, who's now 87, was studying the effects of "peaceful nuclear explosions," or PNEs, as a physicist at California's Livermore National Laboratory. The project was called "Operation Plowshare," in reference to an Old Testament passage about turning the weapons of war into the tools of farming.

He remembers staring out at the desert, waiting for the huge blast.

"You saw a tremendous light, a bright light," he said. "Then you hear the sound wave that's generated. Boom, boom!"

According to an informational video produced by the Department of Energy, the Sedan explosion created a cloud of dust that rose 12,000 feet into the air. It resulted in the largest man-made crater in America. Apollo astronauts used it to train for moon missions.

Nordyke was proud to be working on such an unusual project. "The only other persons that were doing that were the Russians," he said. He remembers learning about Soviet tests from satellite photographs. Lake Chagan in modern-day Kazakhstan was created by a peaceful nuclear explosion.

But this was an arms race that neither country won. In the decade after Moscow and Washington banned most types of nuclear testing, in 1963, the public questioned whether nuclear tests were safe. There was even a bizarre film made about a mutant scientist at the Nevada Test Site: "The Beast of Yucca Flats."

Audra Wolfe, a historian of the Cold War, said the dream of "peaceful nuclear explosions" had a lot to do with wishful thinking.

"If you're a scientist or engineer who's dedicated your life to building atomic or nuclear weapons, and you're looking for some meaning in your life, then it can be really compelling to think that these weapons can be used for good," Wolfe said.

She added that humans have a bad habit of expecting technology to solve all of our problems. In the end, Operation Plowshare left a legacy of radioactive fallout and waste.

"The people who were planning Plowshare were choosing to ignore those negative consequences," Wolfe said.

In the 1970s, after 10 years and tens of millions of dollars of spending, Operation Plowshare finally went to seed.

The anti-nuclear movement that helped stop it still hasn't quit. This week, the United Nations approved a ban on nuclear weapons, which nuclear-armed powers ignored but could become international law.

As for Milo Nordyke, he ended up learning Russian — which he used to help negotiate treaties that further restricted the use of nuclear bombs.

https://www.pri.org/stories/2017-07-11/can-nuclear-explosion-be-peaceful-us-scientists-used-think-so Return to top

Stars and Stripes (Washington, DC)

STRATCOM Chief: US Must Speed Weapons Tests to Counter North Korea

By John Vandiver

July 10, 2017

The United States is moving too slowly in response to North Korea's rapidly improving missile development program, the general in charge of America's nuclear arsenal said.

Air Force Gen. John Hyten, who leads U.S. Strategic Command, said the U.S. must take more technological risk to counter the communist state's risk-taking leader, Kim Jong Un.

"Kim Jong Un has gone very fast, and we have to step up and go fast in response," Hyten said in an interview with Stars and Stripes on Sunday. "We are not going fast. We are so risk-averse that we only test every 18 months."

Hyten suggested the U.S. could draw lessons from Kim's willingness to fail.

Headlines about "flops" and fizzled launches, which supposedly leave the regime's isolated leaders "red-faced," fail to grasp best practices in developing high-end weapons systems, Hyten said.

"We've seen things like, 'He launches and fails, launches and fails. He (Kim) is a fool. He doesn't know what he is doing," Hyten said. "No, that is actually the way you build rockets. The best way to build rockets, the best way to move fast, is to build it, test it, instrument it, learn from your failures."

Concerns continue to mount about Pyongyang's next move in the wake of its test earlier this month of a new intercontinental ballistic missile.

Over the weekend, the U.S. sent a pair of bombers to the region in a show of force, carrying out a mock bombing run on a South Korean airfield.

"The country of North Korea has the capability now that is a threat to the United States, and we have to be able to figure out how to deal with that," Hyten said during a stop in Stuttgart, Germany, where he was to meet with U.S. European and Africa Command leaders.

North Korea's attempts to develop a smaller nuclear warhead, coupled with a long-range ICBM, have prompted some analysts to estimate that Pyongyang could have a nuclear platform capable of hitting the U.S. within two years.

Hyten contrasted North Korea's testing program with U.S. testing programs, which tend to be wary of the publicly known failures that Kim seems to shrug off.

"If you want to be able to respond to a threat that is going fast you better be able to figure out how to go fast," Hyten said. "You sometimes learn more from failure than you do from a success ... We have somehow forgotten that."

Questions were raised about the American SM-3 Block IIA missile, which is designed for the Aegis system, when one failed to hit a target in Hawaii last month.

But Hyten said that lessons will be learned that move the technology forward.

There has been fierce debate in Washington about the viability and cost of various missile defense systems.

The U.S. has spent billions of dollars on both the Aegis system and the Terminal High Altitude Area Defense system, or THAAD.

In response to North Korea and a more aggressive Russia, STRATCOM, which manages the deployment of America's long-range bombers, has put the military's most-lethal aircraft on steady rotation. In recent weeks, B-1, B-2 and B-52 bombers have carried out missions in the Pacific and Europe.

"We have so many capabilities that are high-demand, low-density assets that we have to divide it up," he said. "We can't be everywhere all the time by ourselves, so we have to work together with our allies."

In Stuttgart, Hyten was slated for talks Monday with EUCOM and AFRICOM leaders before heading to France, Greenland, England and Scotland, where the U.K. has a nuclear submarine base.

STRATCOM possesses a range of high-end war fighting capabilities that could be used in a potential Russia conflict. Besides handling the U.S.'s nuclear triad, STRACOM is involved in electronic warfare, cyber and space operations.

"My big concern is not really today," Hyten said. "We have old equipment, and if we don't modernize a lot of that equipment it's going to be a problem 10 or 20 years from now."

Efforts underway to modernize the military's nuclear program are not yet where they should be, according to Hyten.

"Unfortunately, we should have started paying that bill 10 or 15 years ago and we wouldn't have found ourselves in the position we are now," he said.

In 2006, Russia announced a complete modernization of its force.

"And our modernization is just getting started," Hyten said. "So if we are going to continue to deter Russia, which is where deterrence starts because they are the other great nuclear power in the world, then we have to make sure we modernize our forces, which is a stress on our budget."

Though STRATCOM currently has sufficient resources, the high pace of operations is "stressing on the force," Hyten said.

https://www.stripes.com/news/stratcom-chief-us-must-speed-weapons-tests-to-counter-north-korea-1.477379#.WWbDb2RSzBI

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Scout Warrior (Minnetonka, MN)

Nuclear-Armed Cruise Missile - AF Moves Ahead

By Sandra Erwin

July 6, 2017

The Pentagon continues to face backlash over a \$20 billion nuclear missile program that critics fear will set off Armageddon.

The Pentagon continues to face backlash over a \$20 billion nuclear missile program that critics fear will set off Armageddon.

The polemical weapon — a stealth cruise missile that would be launched from Air Force bombers and strike targets nearly 2,000 miles away — has been in the works since the early days of the Obama administration. But pushback from the arms control community has intensified over the past two years, notably after former Defense Secretary William Perry called for the cancellation of the program.

With the Pentagon in the midst of conducting a "nuclear posture review" for the first time since 2010, opponents of the so-called "long-range standoff missile," or LRSO, see a window of opportunity to convince Defense Secretary Jim Mattis that the program should be nixed.

The Air Force is scheduled to award contracts this fall for the next development phase of the LRSO. The Pentagon's top contractors, including Lockheed Martin, Boeing and Northrop Grumman, have submitted bids. The stakes are high as the Air Force expects to buy up to 1,000 missiles and warheads. "The LRSO effort remains on track to award up to two technology maturation and risk reduction contracts by the fourth quarter of fiscal year 2017," said Air Force spokeswoman Capt. Emily Grabowski.

"This effort is continuing," Grabowski told RealClearDefense. Air Force leaders have spent years tweaking the requirements and making sure the defense industry is up to the task, she said.

"From 2011 to 2016, the LRSO program office conducted numerous interactions with the industry, including contract trade studies, industry days, requirement-cost tradeoff analyses and providing draft requests for proposals.

An acquisition plan was approved in July 2016.

The Air Force so far has spent \$16 million on LRSO research and development in 2016, \$95 million in 2017, and is seeking \$451 million in 2018. The Energy Department's national nuclear security administration is requesting \$400 million to start developing the LRSO warhead. The Defense Department has estimated the entire warhead program will cost \$8.6 billion, and the missile delivery system will run about \$10 billion.

The Pentagon's larger effort to modernize all three legs of the nuclear triad — the Navy's nuclear missile submarines, the Air Force's strategic bombers and land-based intercontinental ballistic missiles — is expected to get full support from the Trump administration and Congress despite its trillion-dollar price tag. But the LRSO, which would replace an aging air-launched cruise missile, continues to raise hackles.

"The LRSO has been debated by this committee over and over again and I suppose I'm going to continue to cause a debate about it," said Rep. John Garamendi (D-Calif.) during the recent House Armed Services Committee markup of the 2018 defense authorization bill.

He cited Perry and others who worry the missile "creates an unnecessary risk of miscalculation, lowers the threshold for nuclear use, is not necessary to preserve U.S. nuclear deterrence and will cost over \$20 billion in the years ahead, money that we could use for many, many other things."

Opponents sought unsuccessfully to make Congress withhold funding for the LRSO until the nuclear posture review is completed and the program receives Mattis' seal of approval.

The weapon undoubtedly has more friends than foes in Congress and the military. "Our senior military officers have repeatedly described the urgent need for an LRSO and the declining reliability of the [current] air-launched cruise missile it will replace," said Rep. Mike Rogers (R-Ala.).

Vice Chairman of the Joint Chiefs of Staff Gen. Paul Selva told lawmakers that the existing missiles were designed and built in the 1970s and the technology is woefully outdated. "A decade from now, those weapons will not be able to penetrate Russian air defenses and, therefore, there's an urgency to their replacement."

"Some argue we should just slow the program down a bit because the nuclear posture review might propose to cancel it," said Rogers. Such possibility seems unlikely, however, because the military brass has come out so forcefully in favor of the program. Rogers also recalled testimony by Obama officials who defended the LRSO as an important element of the U.S. nuclear modernization program designed to help maintain strategic parity with Russia and China.

LRSO critics were both surprised and encouraged that Mattis, when pressed by Sen. Dianne Feinstein (D-Calif.) during a hearing last month, said he would further study the issue. "I need to look at that one," he told Feinstein. Mattis said LRSO "makes sense, but I have to look at it in terms of its deterrence capability."

Nuclear weapons analyst Kingston Reif of the Arms Control Association said there is a chance that the nuclear posture review will delay, if not end, the LRSO program. "We're likely to see the Trump administration want to put its own stamp on U.S. nuclear policy," he said. "We could see some significant changes." Although Mattis has yet to "offer his full support," the odds that he will propose the termination of the LRSO are slim, Reif said. "But it's interesting that he is still raising questions. He has expressed support for every element of the triad except this system. And he's mentioned Perry's criticism in particular."

One reason to not support this system is that it is "completely redundant," asserted Reif. The Air Force will have a stealth bomber that, armed with existing cruise missiles and nuclear gravity bombs, would in theory be able to penetrate air defenses. Adding a stealth cruise missile brings in an entirely new capability that is arguably overkill, he said.

"It creates a new arms race not in terms of numbers but in terms of technological capability."

Perry specifically raised the specter of nuclear holocaust if a country like Russia or China mistook a conventional U.S. Air Force cruise missile for an LRSO. The former defense secretary, who is highly respected across the U.S. defense establishment, said he worries about the United States using a stealthy air-launched cruise missile along with a stealth bomber. "In a conflict, if we use a cruise missile, the country on the receiving end won't know if it's nuclear or conventional," Reif said.

Adam Lowther, director of the Air Force Institute of Technology's school for advanced nuclear deterrence and an LRSO advocate, said the naysayers' arguments don't hold water. The idea that a 40-year-old missile is good enough to deter Russia is preposterous, he said.

"It's a totally different air defense environment; it's far more challenging for us, penetrating air space," Lowther said. "The Russians and Chinese have improved ground-based and space-based early warning systems. These are targets that are very difficult to hit."

The critics are wrong, he said, because they are not factoring the technological advances that U.S. enemies are making. "Bombers that are loaded with LRSO missiles have the ability to dramatically complicate an enemy's defense strategy," he said. It takes an advanced cruise missile to target North Korean facilities in narrow valleys that would be difficult for any other weapon to penetrate. And targeting nuclear facilities with an autonomous missile, as opposed to sending in a manned bomber, keeps pilots out of harm's way, he said.

From a deterrence perspective, said Lowther, the prospect of the United States having 1,000 LRSO weapons "will give adversaries a real reason to think twice."

http://www.scout.com/military/warrior/story/1789715-nuclear-armed-cruise-missile-af-moves-ahead

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Breaking Defense (New York, NY)

Trump Policy Nominee Boosts Nukes, Slams Russia

By Sydney Freedberg

July 12, 2017

President Trump's pick for the No. 2 policy job in the Pentagon, David Trachtenberg, endorsed new nuclear delivery systems, praised NATO and allies in general and took a hard line towards the Kremlin in his confirmation hearing today. Responding to senators' questions, Trachtenberg said Russia should pay "a cost" for meddling in the 2016 elections and twice said he disagreed with pro-Russia statements by Secretary of State Rex Tillerson.

Trachtenberg seemed to go beyond Defense Secretary Jim Mattis in endorsing the Long-Range Standoff Weapon, the proposed replacement to the aging nuclear-tipped Air-Launched Cruise Missile. Mattis has been uncommitted about LRSO so far, but in written testimony to the Senate Armed Services Committee released this morning, Trachtenberg wrote that ALCM "makes a unique contribution to U.S. nuclear deterrence (and) if the United States is to retain the capabilities that the ALCM currently provides, I believe the Long-Range Standoff Weapon (LRSO) will be a necessary element of the bomber leg of the U.S. nuclear triad."

Since nominees' written testimony is meticulously vetted, this thumbs-up to LRSO is probably an intentional signal from the Pentagon, perhaps even a hint as to Mattis's evolving position, and not just Trachtenberg's personal opinion as an expert in nuclear arms control and deterrence. That said, Trachtenberg does leave himself an out by saying we need LRSO "if" we want to retain ALCM's capabilities. The ongoing Nuclear Posture Review, he notes, "will consider US plans for retaining cruise missile capability" — which suggests that getting rid of nuclear cruise missiles altogether is at least theoretically an option.

Trachtenberg also endorsed upgrading the F-35 Joint Strike Fighter to carry nuclear weapons (socalled dual capability) as quickly as possible and deploying nuclear weapons to Europe. His desire for a powerful nuclear force fits seamlessly into his strong support for NATO, his marked distrust for Russia, and his belief that the US must play a central role in global security — all positions at odds with past Trump statements both on the campaign trial and from the White House. "NATO is a major source of political will and operational capability that enables the United States to more effectively deter and counter threats to our national security," Trachtenberg wrote, praising the alliance's support for US interests in Europe, Afghanistan, and elsewhere. He also noted that "our NATO Allies are taking concrete steps to share the burden of common defense," in contrast to Trump's repeated public protests they're paying less than they might (which is also true: All the NATO allies have pledged to increase their contributions to at least 2 percent of their GDP by 2024, but the US spends about 3.6 percent).

Overall, "the United States plays a unique role in the world as a guarantor of security in key regions and as an ally and partner to many nations. We do so to protect our national interests," Trachtenberg wrote. "Protecting the U.S. homeland, U.S. citizens, and our allies and interests abroad remains a paramount, strategic vital interest." That kind of internationalism is, again, at odds with America-First rhetoric from Trump and advisors like Steve Bannon.

As for Russia, which Trump and Secretary of State Tillerson have often courted as a partner, Tratchenberg was withering in his oral testimony. In his opening statement, he devoted more detail to Russia than any other threat, saying that "Russia has invaded a neighbor whose territorial integrity it pledged to respect, violated its arms control treaty commitments, and threatened NATO allies with nuclear attack."

Minutes later, the committee's Republican chairman, John McCain, asked pointedly: "Mr. Trachtenberg, last week Sec. Tillerson commented that Russian and American objectives in Syria are, quote, 'exactly the same.' Do you agree?"

"No, sir, I do not," Trachtenberg said.

"Do you believe that a Syria led by Assad or a member of the Assad family" — which Russia has spent blood and treasure to prop up — "is an acceptable outcome?"

"I believe that is an unacceptable outcome," Trachtenberg told McCain.

Sen. Elizabeth Warren, a Democrat, followed up by asking about another Tillerson statement about Russia's role in Syria from the same press conference: "Maybe they've got the right approach and we've got the wrong approach."

"I do not understand the context in which the secretary made that statement," Trachtenberg began with a modicum of caution, "but taking it on face value, I would have to disagree with that. I think Russia's objectives in Syria are clearly antithetical to our objectives. I believe Russia has propped up the Syrian regime. It has been the greatest enabler of Bashar al-Assad's atrocities there against his own people. Russia has worked with Iran to destabilize the region. Russia has also threatened to shoot down American planes."

"I see that as quite troubling," he concluded.

Sen. Richard Blumenthal, another Democrat, picked up the theme and broadened it beyond Syria, asking "you would agree with me that Russia is a dangerous adversary to this country?"

"I would, senator," Trachtenberg said without hesitation.

"And the (fact of an) attack by Russia on our democratic institutions has been accepted by the Intelligence Community," Blumenthal continued. "Do you agree that Russia purposefully attacked our democracy during the 2016 elections?"

"Senator, I have no reason to doubt the conclusions of the intelligence community," Trachtenberg said.

Do those attacks amount to an "act of war"?

"I would be somewhat reluctant to use the term of act of war, only because I do not know if that implies some legal connotations," Trachtenberg said. "It was certainly a hostile act. And I would say an attack like that in the cyber realm does not, in my view, need to be defined as an act of war in order to merit an aggressive response."

Should we impose a cost on the Russians to deter them from doing this again?

"Yes, sir, I believe there needs to be a cost."

"Would you agree," Blumenthal went on, "that the sanctions bill that passed the Senate by an overwhelming bipartisan vote, 98-2, is an important tool...the President should sign?"

"I agree that it is an important tool, Senator," Trachtenberg said. He did not, notably, say whether the President should sign the bill — that would wildly overstep his role as a sub-cabinet official who's not even been confirmed.

But otherwise Trachtenberg hardly hesitated to give his blunt assessments. As Sen. Angus King said, "you are one of the most candid witnesses we've had."

Sen. McCain promised to advance the nominations of Trachtenberg and his fellow nominees testifying today, pledging to "fight" and "force a vote" if the Senate's Democratic leadership tries to block them.

http://breakingdefense.com/2017/07/trump-policy-nominee-boosts-nukes-slams-russia/

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US COUNTER-WMD

Science Magazine (Washington, DC)

How Canadian Researchers Reconstituted an Extinct Poxvirus For \$100,000 Using Mail-Order DNA

By Kai Kupferschmidt

July 6, 2017

Eradicating smallpox, one of the deadliest diseases in history, took humanity decades and cost billions of dollars. Bringing the scourge back would probably take a small scientific team with little specialized knowledge half a year and cost about \$100,000.

That's one conclusion from an unusual and as-yet unpublished experiment performed last year by Canadian researchers. A group led by virologist David Evans of the University of Alberta in Edmonton, Canada, says it has synthesized the horsepox virus, a relative of smallpox, from genetic pieces ordered in the mail. Horsepox is not known to harm humans—and like smallpox, researchers believe it no longer exists in nature; nor is it seen as a major agricultural threat. But the technique Evans used could be used to recreate smallpox, a horrific disease that was declared eradicated in 1980. "No question. If it's possible with horsepox, it's possible with smallpox," says virologist Gerd Sutter of Ludwig Maximilians University in Munich, Germany.

Evans hopes the research—most of which was done by research associate Ryan Noyce—will help unravel the origins of a centuries-old smallpox vaccine and lead to new, better vaccines or even cancer therapeutics. Scientifically, the achievement isn't a big surprise. Researchers had assumed it would one day be possible to synthesize poxviruses since virologists assembled the much smaller poliovirus from scratch in 2002. But the new work—like the poliovirus reconstitutions before it—is raising troubling questions about how terrorists or rogue states could use modern biotechnology. Given that backdrop, the study marks "an important milestone, a proof of concept of what can be done with viral synthesis," says bioethicist Nicholas Evans—who's not related to David Evans—of the University of Massachusetts in Lowell.

The study seems bound to reignite a long-running debate about how such science should be regulated, says Paul Keim, who has spent most of his career studying another potential bioweapon, anthrax, at Northern Arizona University in Flagstaff. "Bringing back an extinct virus that is related to smallpox, that's a pretty inflammatory situation," Keim says. "There is always an experiment or event that triggers closer scrutiny, and this sounds like it should be one of those events where the authorities start thinking about what should be regulated."

Little-noticed discussion

David Evans acknowledges that the research falls in the category of dual-use research, which could be used for good or bad. "Have I increased the risk by showing how to do this? I don't know," he says. "Maybe yes. But the reality is that the risk was always there."

Evans discussed the unpublished work in November 2016 at a meeting of the Advisory Committee on Variola Virus Research at the World Health Organization (WHO) in Geneva, Switzerland. (Variola is the official name of the virus that causes smallpox.) A report from that meeting, posted on WHO's website in May, noted that Evans's effort "did not require exceptional biochemical knowledge or skills, significant funds or significant time." But it did not draw much attention from biosecurity experts or the press.

Also little noticed was a press release issued by Tonix, a pharmaceutical company headquartered in New York City with which Evans has collaborated, which also mentioned the feat. Tonix says it hopes to develop the horsepox virus into a human smallpox vaccine that is safer than existing vaccines, which cause severe side effects in a small minority of people. Evans says it could also serve as a platform for the development of vaccines against other diseases, and he says poxvirus synthesis could also aid in the development of viruses that can kill tumors, his other area of research. "I think we need to be aware of the dual-use issues," Evans says. "But we should be taking advantage of the incredible power of this approach."

The double-stranded variola genome is 30 times bigger than the poliovirus genome, which Eckard Wimmer of State University of New York at Stony Brook assembled from mail-ordered fragments in 2002. Its ends are also linked by structures called terminal hairpins, which are a challenge to recreate. And though simply putting the poliovirus genome into a suitable cell will lead to the production of new virus particles, that trick does not work for poxviruses. That made building variola "far more challenging," says Geoffrey Smith of the University of Cambridge in the United Kingdom, who chairs WHO's variola advisory panel.

In 2015, a special group convened by WHO to discuss the implications of synthetic biology for smallpox concluded that the technical hurdles had been overcome. "Henceforth there will always be the potential to recreate variola virus and therefore the risk of smallpox happening again can never be eradicated," the group's report said. But Evans felt like the matter was never really put to rest. "The first response was, 'Well let's have another committee to review it,' and then there was another committee, and then there was another committee that reviewed that committee, and they brought people like me back to interview us and see whether we thought it was real," he says. "It became a little bit ludicrous."

Evans says he did the experiment in part to end the debate about whether recreating a poxvirus was feasible, he says. "The world just needs to accept the fact that you can do this and now we have to figure out what is the best strategy for dealing with that," he says.

Two rejections

Evans declines to discuss details of his work because, after two rejections, he is about to resubmit a paper about it for publication. But the WHO report says the team purchased overlapping DNA fragments, each about 30,000 base pairs in length, from a company that synthesizes DNA commercially. (The company was Geneart, in Regensburg, Germany, Evans says.) That allowed them to stitch together the 212,000-base-pair horsepox virus genome. Introducing the genome into cells infected with a different type of poxvirus led these cells to start producing infectious horsepox virus particles, a technique first shown to work in a 2002 paper in the Proceedings of the National Academy of Sciences. The virus was then "grown, sequenced and characterized," the report notes, and had the predicted genome sequence.

Evans says Science and Nature Communications both rejected the paper. Caroline Ash, an editor at Science, says the paper wasn't formally submitted to the journal, but that Evans inquired about publication and provided the Tonix press release. "While recognizing the technical achievement, ultimately we have decided that your paper would not offer Science readers a sufficient gain of novel biological knowledge to offset the significant administrative burden the manuscript represents in terms of dual-use research of concern," Ash says she replied to Evans.

Evans says he has run his draft papers by Canadian government officials involved in export and trade as well as the Public Health Agency of Canada and the Canadian Food Inspection Agency, which were "very helpful and provided timely and sensible guidance," he says. "These things potentially fall under export legislation, because technically it could be viewed as instructions for manufacturing a pathogen," he says. To avoid running afoul of international conventions, Evans says he "provided sufficient details so that someone knowledgeable could follow what we did, but not a detailed recipe."

Peter Jahrling, a virologist at the National Institutes of Allergy and Infectious Diseases in Bethesda, Maryland, says the paper should definitely be published. "Not only is it novel," he says. "It is also extremely important."

Regulatory questions

Producing the variola virus in the same fashion would be prohibited under WHO regulations and rules in place in many nations. Labs are not allowed to make more than 20% of the variola genome, and the companies that make and sell DNA fragments have voluntary checks in place to prevent their customers from ordering ingredients for certain pathogens unless they have a valid reason. But controlling every company in the world that produces nucleic acids is impossible, Keim says. "We've recognized for quite a few years that regulating this type of activity is essentially impossible," he says.

Instead, Keim says, there should be an international permit system for researchers who want to recreate a virus no longer found in nature. Current U.S. rules already require federally-funded researchers who plan to do an experiment that "generates or reconstitutes an eradicated or extinct agent" that is on a 15-agent list of dual-use agents to undertake a special review and risk assessment. That U.S. list of regulated agents includes variola, but not horsepox, because it's not considered a dangerous virus itself.

The system in Canada is different, says Gregory Koblentz, a biodefense expert at George Mason University in Fairfax, Virginia, who has been looking into the experiment since noticing the Tonix press release in March. There, the rules say even research that does not involve certain dangerous pathogens, but that could nonetheless generate knowledge that poses a dual-use risk, should be reviewed. "That should have captured the horsepox synthesis," he says. Evans talked to federal agencies in Canada, which was not even required of him, and his university did look at the safety aspect of bringing back an animal pathogen. "But as far as I understand, they did not engage in a systematic review of the broader dual-use implications of synthesizing an orthopox virus," says Koblentz. "I don't think this experiment should have been done."

Nicholas Evans, the bioethicist, thinks that new rules need to be put in place given the state of the science. "Soon with synthetic biology ... we're going to talk about viruses that never existed in nature in the first place," he says. "Someone could create something as lethal as smallpox and as infectious as smallpox without ever creating smallpox." WHO should create an information sharing mechanism obliging any member state to inform the organization when researchers plan to synthesize viruses related to smallpox, he argues.

Evans's experiment may also render moot a long-running debate on whether to destroy the two last known caches of variola. After smallpox was eradicated in 1980, labs around the world agreed to destroy their remaining smallpox samples or ship them to the Centers for Disease Control and Prevention (CDC) in Atlanta or to the Russian Research Institute of Viral Preparations in Moscow. (The Russian samples were later moved to the State Research Centre of Virology and Biotechnology in Novosibirsk.) Since then, the fate of those remaining stocks has been the focus of intense debate. "Destructionists" have argued that wiping out the last strains would make the world a safer place, whereas "retentionists" say keeping the virus—and studying it—could help the world prepare for future outbreaks.

Now that variola can be synthesized, the decision hardly matters, Jahrling says. "You think it's all tucked away nicely in freezers, but it's not," he says. "The genie is out of the lamp." Evans's work is "a gamechanger for the discussion," confirms Andreas Nitsche of the Robert Koch Institute in Berlin, who attended the WHO meeting where Evans presented his work last fall.

Fears of a return of smallpox—which kills up to one-third of its victims—ran high in the United States after 9/11 and the anthrax letters mailed to U.S. politicians and media figures a few weeks later. The events led the U.S. government to amass big new stockpiles of smallpox vaccine and start a vaccination campaign for so-called first responders. But though a smallpox outbreak would almost certainly create panic and pose an unprecedented test for public health systems, scientists familiar with the disease say an outbreak could probably be contained quite easily because smallpox is not highly infectious and spreads slowly—qualities that made it possible to eradicate it in the first place.

Mysterious origins

Much less is known about horsepox. Pox viruses are known to infect many animals, and horsepox is frequently mentioned in historic accounts, but it seems to have disappeared from nature, possibly because of modern husbandry practices. Scientists at the Plum Island Animal Disease Center in New York published a genome sequence for horsepox in 2006, based on a virus isolated from sick horses in Mongolia 40 years earlier. That virus is still held at CDC; Evans says one reason he decided to synthesize a new virus was that he could not get permission to use the CDC samples for commercial purposes.

Evans says his project has academic value as well: It could help elucidate the early history of smallpox immunization. The vaccine used to eradicate smallpox—the world's oldest vaccine—is itself a living virus named vaccinia; it was first used in 1796 by Edward Jenner, a U.K. doctor. Popular accounts usually have Jenner using cowpox to inoculate people after he noticed that

dairymaids appeared to be immune to smallpox. But there are also stories implicating horsepox, and the published horsepox genome looks very similar to some old vaccinia strains, bolstering the hypothesis that the vaccine was derived from horses. (To add another layer of confusion, both horsepox and cowpox may originally have been rodent poxviruses that only occasionally infected livestock.)

Evans hopes to study the function of some horsepox genes by making specific deletions, which could shed light on how the vaccine strain arose. "This is the most successful vaccine in human history, the foundation of modern immunology and microbiology, and yet we don't know where it came from," he says. "There is a huge, interesting academic question here."

http://www.sciencemag.org/news/2017/07/how-canadian-researchers-built-poxvirus-100000using-mail-order-dna

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Machine Design (New York, NY)

Organic Glass Could Lead to Better, Less Expensive Nuclear-Threat Detectors

By Stephen Mraz

July 7, 2017

Researchers at Sandia Lab are working on less expensive but more sensitive radiation detectors.

A team of engineers at Sandia National Labs developed a scintillator made of an organic glass which is more effective and less costly than the current state of the art scintillators made of trans-stilbene ((C6H5CH)2). Scintillators luminesce in the presence of ionizing radiation. And organic glasses are carbon-based materials that can be melted and do not become cloudy or crystallize upon cooling.

The team first designed, synthesized, and assessed new scintillator molecules, hoping to understand the relationship between molecular structures and the resulting radiation detection properties. They were able to find some scintillating materials that could differentiate between nuclear materials which could be potential threats and normal, non-threatening sources of radiation, such as those used for medical treatments or the radiation naturally present in the atmosphere.

Further breakthroughs became possible when the team realized scintillators behave a lot like lightemitting diodes. With LEDs, a known source and amount of electrical energy applied to a device (the LED), and it creates a certain amount of light. In contrast, scintillators create light in response to the presence of an unknown source of radiation source. The source can then be identified based on the amount of light produced and the speed with which it appears.

The gold standard scintillator material for the past 40 years has been the crystalline form of a molecule called trans-stilbene. It is highly effective at differentiating between two types of radiation: gamma rays, which are ubiquitous in the environment, and neutrons, which emanate almost exclusively from controlled threat materials such as plutonium or uranium. Trans-stilbene is sensitive to these materials, generating a bright light in response to their presence. But it takes a lot of energy and several months to produce a trans-stilbene crystal only a few inches long. The crystals are incredibly expensive (around \$1,000 per cubic inch) and they're fragile, so they aren't commonly used in the field.

Instead, the most common scintillators used to detect nuclear threats at borders and ports of entry use plastic scintillators. They're inexpensive (less than a dollar per cubic inch) and can be molded

into large shapes, which is essential for scintillator sensitivity. As researcher Patrick Feng explains, "The bigger the detector, the more sensitive it's going to be, because there's a higher chance radiation will hit it."

But plastics aren't able to efficiently differentiate between types of radiation—it takes a separate helium tube to do that. The type of helium used in these tubes is rare, non-renewable, and significantly adds to the cost and complexity of a plastic-scintillator device. And the light plastic scintillators create isn't particularly bright, at only two-thirds the intensity of trans-stilbene, which means they do not do well at detecting weak radiation sources.

So the Sandia team began experimenting with organic glasses, which can discriminate between types of radiation. In fact, Feng's team found the glass scintillators are even better the transstilbene in radiation detection tests—they are brighter and better at discriminating between types of radiation.

The team faced one major challenge: The initial organic glass compounds were unstable. If they got too hot for too long, they would crystallize, which affected performance. Feng's team found that blending compounds containing fluorene to the organic glass made them indefinitely stable. The stable glasses could then also be melted and cast into large blocks, which is an easier and less expensive process than making plastics or trans-stilbene. Fluorene also made the glass more transparent and made it emit brighter light in the presence of radiation.

The next step toward commercialization will be casting a large prototype organic glass scintillator for field testing. Feng and his team want to show that organic glass scintillators can withstand the humidity and other environmental conditions found at ports. The team also plans to experiment with organic glass until it can distinguish between gamma-ray sources that are non-threatening and those that can be used to make dirty bombs.

http://www.machinedesign.com/materials/organic-glass-could-lead-better-less-expensivenuclear-threat-detectors

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Wired (San Francisco, CA)

The Pentagon Ponders the Threat of Synthetic Bioweapons

By Eric Niiler

July 10, 2017

When it comes to detecting new organisms that emerge from exotic places and cause global havoc, the US military is ready. The Pentagon operates infectious disease labs and surveillance networks in places like Kenya, Georgia, and Thailand, as well as a giant research center and vaccine-making unit just outside Washington, DC.

All that effort makes sense, with 200,000 US troops deployed at bases in 171 countries that can encounter a wide range of emerging biological threats. But Pentagon planners are starting to wonder what happens if the next deadly flu bug or hemorrhagic fever doesn't come from a mosquito-infested jungle or bat-crowded cave. With new gene editing tools like Crispr-Cas9, state enemies could, theoretically, create unique organisms by mixing-and-matching bits of genetic information.

As this scenario evolves from sci-fi to real-world possibility, many public health experts, biology researchers, and even the military have begun to examine possible threats, according to Christian

Hassell, deputy assistant secretary of defense for chemical and biological defense. "We had people asking us, 'How is the government responding to this? What is the threat that it poses, if any?"

So Hassell and his colleagues at the Pentagon funded a year-long review by the National Academies of Sciences of the biodefense vulnerabilities created by synthetic biology. This week, the committee of experts held their fourth of six meetings in Washington, inviting academic scientists, biotech CEOs, and public health experts. A preliminary report outlining the scope and direction of the probe is undergoing "classified review" before being released to the public, and a final report—with recommendations—is due next year.

Those results could have implications for defensive strategies against a new type of bioweapon, potentially more difficult to identify because it resembles its "natural" counterpart. And that defense could start at home—by limiting biological research that has potentially nefarious applications. The final review will have the potential to guide regulations on federally-funded research labs.

Conflict over the need for future regulations spiked during the public portion of the meeting on Thursday—likely continuing on Friday behind closed doors. Some scientists at the meeting felt that the molecular biology community is already doing enough to monitor itself: The academic biology and DIY bio-hacking communities have voluntary codes of ethics to deter experimentation by would-be bad guys. And they fear what might happen to important genetic research if the Pentagon gets too paranoid.

They point to 2014, when the federal government halted 18 studies on so-called "gain of function" research that tinkered with viruses like MERS, SARS, and the flu to make them more likely to transmit in humans. The White House is taking another look at that moratorium to determine whether it still makes sense. Many scientists hope the ban is lifted—they argue understanding how viruses mutate is critical to stop them.

Scientists at the meeting expressed a range of ideas about how the military could best defend against biological threats. Sriram Kosuri runs a synthetic biology lab at UCLA that has developed libraries of DNA sequences that can be developed into new kinds of organisms. While he understands the possibility of a lab-engineered threat, he believes the Pentagon and federal health officials should focus on responding to emerging public health menaces rather than monitoring academic labs that use genetic manipulation tools. "There's a legitimate threat of emerging viruses and we need to be prepared for those things," Kosuri said during a break in the meeting. "The tiny threat of engineered viruses is miniscule compared to that."

The Pentagon could also use the country's surveillance skills and genetic smarts to outwit biological bad guys. Howard Salis at Penn State has developed a computer program to predict what a new organism will do based on its genetic sequence. He thinks the best way to stop bad actors is at the beginning. "How do you stop someone from getting at the testing stage, or at the clinical stage of doing something bad?" Salis told the audience. "If you catch that actor trying to design the system, it's early in the process, it's easy to see what they are designing."

For now, the threat of a hyper-lethal designer virus remains hypothetical. "This is not a tomorrow threat, it might be a tomorrow-tomorrow threat," says Daniel Gerstein, an analyst at the Rand Corporation and former science policy advisor for the Obama administration. "I don't think it's purely science fiction. But we have not seen a lot of terrorists looking to manipulate genome sequences."

And even if they do, the good news (for now) is that responding to a super-charged human-made virus is pretty much the same as responding to a nasty Ebola- or Zika-like outbreak, according to

Cmdr. Franca Jones, chief of global emerging infections surveillance for the Pentagon's Defense Health Agency.

There are ways to determine whether a flu virus comes from a lab or the jungle. "We should be able to detect newly created organisms using a variety of methodology we have available, DNA sequencing being one," says Jones. But whether it's natural or lab-grown, public health officials will still need the resources to respond quickly to a infectious disease outbreak. "When it comes to our infrastructure to respond," she says, "I don't think there is much difference."

https://www.wired.com/story/the-pentagon-ponders-the-threat-of-synthetic-bioweapons/

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Missile Defense Agency (Washington, DC)

THAAD Successfully Intercepts Target in Missile Defense Test

Author Not Attributed

July 11, 2017

The U.S. Missile Defense Agency (MDA), the Ballistic Missile Defense System Operational Test Agency, and U.S. Army soldiers of the 11th Air Defense Artillery Brigade from Fort Bliss, Texas, conducted an intercept test today of the Terminal High Altitude Area Defense (THAAD) element of the nation's ballistic missile defense system.

The test, designated Flight Test THAAD (FTT)-18, was executed by MDA, supported by elements of the U.S. Army, Joint Forces Component Command for Integrated Missile Defense, U.S. Air Force, U.S. Coast Guard, Pacific Spaceport Complex Alaska (PSCA), Ballistic Missile Defense Operational Test Agency, DoD Operational Test and Evaluation, and the Army Test and Evaluation Command.

A ballistic missile target was air-launched by a U.S. Air Force C-17 over the Pacific Ocean north of Hawaii. A THAAD weapon system located at PSCA in Kodiak, Alaska, detected, tracked and intercepted the target. Preliminary indications are that planned flight test objectives were achieved and the threat-representative, intermediate-range ballistic missile (IRBM) target was successfully intercepted by the THAAD weapon system.

"I couldn't be more proud of the government and contractor team who executed this flight test today," said MDA Director Lt. Gen. Sam Greaves. "This test further demonstrates the capabilities of the THAAD weapon system and its ability to intercept and destroy ballistic missile threats. THAAD continues to protect our citizens, deployed forces and allies from a real and growing threat."

Soldiers from the 11th Air Defense Artillery Brigade conducted launcher, fire control and radar operations using the same procedures they would use in an actual combat scenario. Soldiers operating the equipment were not aware of the actual target launch time.

This was the 14th successful intercept in 14 attempts for the THAAD weapon system. The THAAD element provides a globally-transportable, rapidly-deployable capability to intercept ballistic missiles inside or outside the atmosphere during their final, or terminal, phase of flight. THAAD is strictly a defense system. The system uses hit-to-kill technology whereby kinetic energy destroys the incoming target. The high-altitude intercept mitigates effects of enemy weapons before they reach the ground.

The successful demonstration of THAAD against an IRBM-range missile threat bolsters the country's defensive capability against developing missile threats in North Korea and other countries around the globe and contributes to the broader strategic deterrence architecture.

The mission of MDA is to develop and deploy a layered ballistic missile defense system to defend the United States, its deployed forces, allies and friends from ballistic missile attacks of all ranges in all phases of flight.

https://www.mda.mil/news/17news0007.html

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US ARMS CONTROL

RadioFreeEurope (Prague, Czechia)

With Fraying U.S.-Russian Ties Comes Fraying Arms Control

By Mike Eckel

July 12, 2017

The U.S. Congress is moving decisively to start dismantling some of the bedrock agreements of U.S.-Russian arms control, reflecting the dangerous state of relations between Washington and Moscow and raising the specter of a new arms race.

In a series of measures attached to the proposed \$696 billion defense budget for 2018, Republicanled lawmakers have taken aim at the Intermediate-Range Nuclear Forces Treaty, as well as the Open Skies and even New START treaties.

All three are widely considered important cornerstones of stability for global arms control, and the measures' likely passage signals a sharp break from years of U.S. policy.

"It would deal a major blow to the U.S.-Russia arms-control architecture, which is already under significant strain," says Kingston Reif, an analyst with the Arms Control Association, a Washington research group.

"These provisions would undermine U.S. security by eroding stability between the world's two largest nuclear powers, increasing the risks of nuclear competition, and further alienating allies already unsettled by [U.S. President Donald] Trump's commitment to their security," he adds.

Relations between Washington and Moscow have eroded over the past decade amid disputes over NATO expansion and U.S. missile defense, democratization and "color revolutions" in the former Soviet Union, and, more recently, Moscow's interventions in Ukraine and Syria.

Trump took office this year praising Russian President Vladimir Putin and calling NATO "obsolete" as he sought to reverse the slide in relations with Moscow. But his administration has been dogged by congressional and criminal investigations into possible Russian meddling in the election and whether Trump associates colluded with Russian officials to influence the vote.

In Moscow, Russian officials have already anticipated passage of the new measures, warning of a new arms race.

"I think this would be worse for everyone because it instigates an attempt for an arms race, and precisely nobody stands to win from that," Vladimir Shamanov, a former airborne commander in chief who now heads the Defense Committee in Russia's lower house of parliament, was quoted by the RIA Novosti news agency as saying on June 26.

INF Already Dead?

The Intermediate-Range Nuclear Forces Treaty (INF) may be the agreement that is under most strain, the result of an escalating dispute over whether Russia has deployed a missile that violates the deal.

Signed by U.S. and Soviet leaders in 1987, the INF for the first time eliminated an entire class of missiles in Europe and set up a new framework for verifying compliance. It is considered a landmark deal that lifted fears of near-instant nuclear-missile attacks on European capitals.

The United States first formally accused Russia of developing a missile in violation of the INF in 2014, though intelligence experts said the system had been under development for several years prior to that.

Washington repeated its findings this year that Moscow was violating the treaty and, in March, General Paul Selva, the vice chairman of the U.S. Joint Chiefs of Staff, told Congress that Russia had begun deploying the weapon. He said it violated the "spirit and intent" of the treaty and that posed a threat to NATO.

"The Intermediate-Range Nuclear Forces Treaty is, most likely, a dead pact walking," James Acton, a policy analyst at the Carnegie Endowment for International Peace, wrote in May. Not only are the prospects of Russia returning to compliance with the treaty bleak, he said, but even serious discussions between Washington and Moscow about the treaty's implementation seem like a "diplomatic bridge too far right now."

Congressional Republicans have been angry for years, accusing the administration of then-President Barack Obama of hiding intelligence on the suspected Russian missile, even as the administration lobbied for New START, another treaty ratified by the U.S. Senate in 2010 cutting the two countries' overall arsenals.

The measure included in the defense budget states that if Russia failed to comply with the INF terms within 15 months of the bill's enactment, "the U.S. would no longer be legally bound by the treaty as a matter of domestic law." It would authorize \$50 million to develop a new, ground-launched, intermediate-range missile.

More Measures

The chairman of the House Foreign Affairs Committee, Ed Royce (Republican-California), meanwhile, attached a separate amendment to the defense bill that would punish Russia by imposing new sanctions and restrict Russia's access to technology to produce advanced conventional weapons, among other things.

A related amendment would restrict Trump's ability to extend the New START treaty after it expires in 2021 if the Trump administration could not certify that the INF dispute had been resolved.

The House was expected to start voting on the legislation this week.

On the Senate side, Tom Cotton (Republican-Arkansas) introduced a similar measure, called the Intermediate-Range Forces Treaty Preservation Act, which would allow the United States to "bring Russia back into compliance with the INF Treaty and begin developing similar missile systems."

Closing The Skies

Moscow, meanwhile, has repeatedly denied Washington's accusations, demanding more details on the suspected INF weapon. It has also accused the United States of deploying missile-defense systems in Eastern Europe, saying those launch systems violated the INF restrictions.

The House defense bill also denies funding related to the Open Skies Treaty, a 2002 agreement that allows the United States and Russia, along with 32 other countries, to conduct unarmed surveillance flights over each another's territory. The goal is to increase transparency and reduce the risk of misinterpreting another country's military actions.

Republicans have complained in recent months that Russia was using new, advanced technology sensors and cameras to conduct its U.S. overflights.

The Obama administration grappled with how to respond to the alleged Russia violations, with some top Pentagon officials saying they supported investing in new and updated weapons systems. That included new unmanned drone systems, new long-range cruise missiles, long-range bombers, and an updated nuclear gravity bomb called the B61-21.

Whither Trump?

The Trump administration, meanwhile, has sent mixed signals about its overall approach to Russia, though Trump himself has stated he wants to ensure the U.S. nuclear arsenal is at the "top of the pack."

The man nominated to the be No. 2 civilian official at the Pentagon, Patrick Shanahan, was pressed by senators at a recent hearing about his approach to Russian arms control.

After seemingly hedging in his oral testimony, Shanahan later revised his written statement for the committee, saying he would favor withdrawal from the INF treaty as a last resort.

"While I understand that the administration is reviewing a number of potential response options," he wrote, "it seems clear that the United States is operating with one hand tied behind its back since we are the only party to the treaty that is following the rules."

The White House on July 11 signaled its opposition to the proposal for a new missile.

"The Administration is currently developing an integrated diplomatic, military, and economic response strategy that maximizes pressure on Russia. It is also evaluating those military capabilities that are needed to protect our national security," the statement said. "This provision unhelpfully ties the Administration to a specific missile system, which would limit potential military response options."

Trump has also ordered a major review of U.S. nuclear policy, a common move by new administrations.

In his comments to Congress in March, Selva said Russian missiles threatened both NATO members and U.S. military infrastructure in Europe. "We'll factor that into the [Nuclear Posture Review] and look for leverage points to try to get the Russians to come back into compliance," he said.

https://www.rferl.org/a/us-russia-fraying-ties-erode-arms-control/28611015.html

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Public Radio International (Minneapolis, MN)

The UN Adopted a Treaty Banning Nuclear Weapons. But No Nuclear-Armed Nations Are On Board.

Author Not Attributed

July 11, 2017

A global treaty banning nuclear weapons was adopted at the United Nations on Friday despite opposition from nuclear powers Britain, France and the United States which said it disregards the reality of dealing with international security threats such as North Korea.

The treaty was adopted by a vote of 122 in favor with one country — NATO member the Netherlands — voting against, while Singapore abstained.

None of the nine countries that possess nuclear weapons — the United States, Russia, Britain, China, France, India, Pakistan, North Korea and Israel — took part in the negotiations or the vote.

Even Japan — the only country to have suffered atomic attacks, in 1945 — boycotted the talks as did most NATO countries.

Loud applause and cheers broke out in a UN conference hall following the vote that capped three weeks of negotiations on the text providing for a total ban on developing, stockpiling or threatening to use nuclear weapons.

But activists who worked to negotiate the deal say the fact that nuclear-armed countries have not participated in the process or supported the deal does not render the agreement moot.

"This treaty was really an initiative from states that don't have nuclear weapons, and that have rejected nuclear weapons as a potential source of security, to do something about the situation," said Ray Acheson of the Women's International League for Peace and Freedom, who was one of the activists who helped negotiate the treaty.

"Developing norms through law has been extremely successful in changing the way that states have thought about and engaged with cluster munitions and land mines, for example ... And so we're hoping that it is sort of this indirect route that we build up a culture against nuclear weapons that we can actually have an impact on them in the future," Acheson said.

Within hours of its adoption, the United States, Britain and France rejected the treaty and said they have no intention of joining it.

"This initiative clearly disregards the realities of the international security environment," said the UN ambassadors from the three countries. "This treaty offers no solution to the grave threat posed by North Korea's nuclear program, nor does it address other security challenges that make nuclear deterrence necessary," they said in a joint statement.

North Korea marked a worrying milestone in its drive to develop nuclear weapons when it tested its first intercontinental ballistic missile this week.

Nuclear powers argue their arsenals serve as a deterrent against a nuclear attack and say they remain committed to the gradual approach to disarmament outlined in the Nuclear Non-Proliferation Treaty (NPT).

The decades-old NPT seeks to prevent the spread of atomic weapons but also puts the onus on nuclear states to reduce their stockpiles.

Impatience, however, is growing among many non-nuclear states over the slow pace of disarmament as are worries that weapons of mass destruction will fall into the wrong hands.

We're operating under "the assumption that the sole purpose of these weapons is never to be used. But we know a lot about human error and human misjudgment and mistakes," Acheson said. "I don't think that we can count on that holding out forever."

Delegitimizing nuclear weapons

Led by Austria, Brazil, Mexico, South Africa and New Zealand, 141 countries joined in drafting the treaty that they hope will increase pressure on nuclear states to take disarmament more seriously.

Ireland, Sweden and Switzerland voted in favor as did Iran, Iraq, Egypt, Kazakhstan and many African and Latin American countries.

"We have managed to sow the first seeds of a world free of nuclear weapons," said Costa Rica's ambassador, Elayne Whyte Gómez, the president of the UN conference that negotiated the treaty.

The International Committee of the Red Cross hailed it as a "historic step towards delegitimizing" nuclear weapons and declared the adoption "an important victory for our shared humanity."

Welcoming "an important step" towards a nuclear-free world, UN Secretary-General António Guterres said the treaty reflects growing "awareness of the catastrophic humanitarian consequences" of a nuclear war.

Disarmament campaigners say the treaty will increase the stigma associated with nuclear weapons and have an impact on public opinion.

"The key thing is that it changes the legal landscape," said Richard Moyes, director of the Britishbased organization Article 36.

"It stops states with nuclear weapons from being able to hide behind the idea that they are not illegal."

"It is beyond question that nuclear weapons violate the laws of war and pose a clear danger to global security," said Beatrice Fihn, director of the International Campaign to Abolish Nuclear Weapons.

The treaty will be open for signatures as of Sept. 20 and will enter into force when 50 countries have ratified it.

https://www.pri.org/stories/2017-07-11/un-adopted-treaty-banning-nuclear-weapons-nonuclear-armed-nations-are-board

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Sputnik (Moscow, Russia)

Gorbachev: Russia, US Should Restore Nuclear Arms Control System

Author Not Attributed

July 6, 2017

Mikhail Gorbachev, the former president of the Soviet Union, stated that the diplomats and the military of Russia and the United States should start saving and restoring the nuclear arms limitation and control system along the whole spectrum of respective international agreements.

Diplomats and the military of Russia and the United States should start the process of restoring the system of nuclear arms limitation and control as soon as possible, Mikhail Gorbachev, the former president of the Soviet Union, told Sputnik on Thursday.

"It's a pressing task that the diplomats and the military urgently start saving and restoring the nuclear arms limitation and control system along the whole spectrum [of respective international agreements], — the START [Strategic Arms Reduction Treaty], the ABMT [Anti-Ballistic Missile Treaty], the medium-range missiles [Intermediate-Range Nuclear Forces Treaty]," Gorbachev said ahead of the first meeting between Russian President Vladimir Putin and US leader Donald Trump.

On Monday, Kremlin aide Yury Ushakov said that Putin and Trump might touch upon the topic of arms control and strategic stability.

Putin and Trump are scheduled to meet for the first time on Friday on the sidelines of the G20 summit in Hamburg.

https://sputniknews.com/politics/201707061055297394-gorbachev-us-russia/

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Arms Control Wonk (Washington, DC)

Safeguards Challenges in the Nuclear Weapons Ban

By Jeffrey Lewis

July 10, 2017

There are a large number of us who are deeply uncomfortable with the final text of the Treaty on the Prohibition of Nuclear Weapons, particularly as it relates to safeguards. Some supporters of the agreement have noted that it seems unreasonable for states that did not participate in the negotiation to complain about the outcome.

They have a point. While I disagree with Wildfire about the acceptability of the final text, I also happen to share the frustration that the United States was not in the room to play a constructive role to work toward the elimination of nuclear weapons. The nuclear weapons states bear considerable responsibility for their refusal to participate in the humanitarian initiative and then in the negotiations on the final agreement.

That said, there are problems here. And while I want to take a little time to think about the situation, I am happy that John Carlson, who served as the Director-General of Australian Safeguards and Non-Proliferation Office and is Counselor at the Nuclear Threat Initiative, has written a short piece summarizing some of the safeguards-related shortcomings from his perspective:

Nuclear weapon ban treaty - serious safeguards problems

John Carlson

The nuclear weapon ban treaty was adopted by the negotiating conference on July 7, 2107. The draft treaty is being submitted to the General Assembly with the intention of opening it for signature on 20 September 2017. It is most unfortunate that in the rush to conclude the treaty, time was not given to address serious safeguards problems in the text. The usual practice of adopting a text by consensus was not followed. The Netherlands voted against the text, Singapore abstained, and others had expressed concerns. Considering the political and historic importance of this treaty it would have been far better to have allowed the time to resolve concerns.

The main safeguards-related problems in the treaty are as follows:

(1) The treaty sets out two different safeguards standards. Parties that had nuclear weapons after July 7, 2017 are required to accept what amounts to the IAEA's comprehensive safeguards

agreement (CSA) plus the additional protocol (AP). The wording used is a safeguards agreement with the IAEA sufficient to provide credible assurance of the non-diversion of declared nuclear material from peaceful nuclear activities and of the absence of undeclared nuclear material or activities in that State Party as a whole. (Articles 4.1 and 4.3). However, other parties (essentially, current non-nuclear-weapon states) are required to conclude only a CSA based on INFCIRC/153 (Article 3.2).

This discrimination is counterproductive to the ban treaty's objective. Strong safeguards against clandestine nuclear weapon programs are absolutely essential for disarmament to proceed. States will not disarm when other states seen as potential (or actual!) proliferators (such as Algeria, Argentina, Brazil, Egypt, Iran, Saudi Arabia, Syria, Venezuela) have not committed to the strongest form of safeguards. The background to this issue is that within the NPT there are some key states (including those listed above) that have not accepted the AP. Presumably the drafters of the ban treaty thought the place to resolve this issue is within the IAEA or the NPT – but in that case the drafters should have sidestepped the issue rather than supporting the AP holdout states. The NPT makes it clear that the achievement of nuclear disarmament requires the collaboration of all parties, not just the nuclear-weapon states. Parties that insist on lower safeguards standards for themselves are not serious about supporting disarmament.

(2) A state that joins the treaty while still possessing nuclear weapons is not required to accept any safeguards until after it has eliminated its weapons (Article 4.3). This is a major weakness – elimination of the state's nuclear weapons could take years, during which time it could be producing new weapons to replace those it is eliminating. The treaty should require the application of safeguards, similar to Article 4.1, within 18 months of joining the treaty.

(3) Another area of concern is the relationship between the ban treaty and other treaties such as the NPT, the CTBT, and nuclear weapon-free zone treaties. The ban treaty provides that implementation shall not prejudice obligations undertaken by States Parties with regard to existing international agreements ... where those obligations are consistent with the Treaty. (Article 18). It is not clear how this would work in practice.

(4) There is at least one situation, fortunately probably minor, where the ban treaty appears to override the NPT. This is in relation to states that have not yet concluded safeguards agreements as required under the NPT. The NPT requires that this be done within 18 months of joining the NPT. Currently there are some 11 NPT parties that have not concluded safeguards agreements. Article 3.2 of the ban treaty requires the safeguards agreement to enter into force within 18 months of joining the safeguards agreement to enter into force within 18 months of ioning the ban treaty. This will be a much later date than 18 months after joining the NPT – in other words the ban treaty contradicts a requirement of the NPT and could have the effect of delaying the introduction of safeguards for parties that don't already have safeguards agreements in force.

(5) Another drafting anomaly, again hopefully minor, is in Article 3.1, which requires states that did not have nuclear weapons at July 7, 2017, to maintain the safeguards obligations they had at the time the ban treaty enters into force. This could have an unintended retroactive effect, e.g. where a state joins the ban treaty some years after the treaty has entered into force and has meanwhile adopted the AP, the paragraph could result in reversion to the CSA. I assume what was intended here was to refer to the time when the ban treaty enters into force for that state.

While issues (4) and (5) seem minor (but should have been avoided), issues (1) to (3) are serious. One could hope that the General Assembly would ask for the text to be re-opened, at least to fix these problems. Probably though states that support the ban treaty will just have to grit their teeth and sign a defective treaty. This reflects very badly on the negotiating process.

http://www.armscontrolwonk.com/archive/1203571/safeguards-challenges-in-the-nuclear-weapons-ban/

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ASIA/PACIFIC

The Economist (London, UK)

North Korea's Long-Range-Missile Test Alarms Washington

Author Not Attributed

July 8, 2017

The device tested appears capable of hitting Alaska

When North Korea claimed it was in the final stages of developing an intercontinental ballistic missile (ICBM) at the beginning of the year, Donald Trump scoffed: "It won't happen." So it was perhaps not a coincidence that North Korea chose America's independence day to test a device that it claimed was indeed an ICBM. Although the claim is technically correct, the country's leader, Kim Jong Un, will probably have to wait a few more years before he can brandish a missile capable of delivering a nuclear warhead to Los Angeles or New York.

The missile appears to have flown for 37 minutes before splashing down some 930km from its launch. According to David Wright of the Union of Concerned Scientists, it had a lofted (heightened) trajectory, reaching an altitude of 2,800km. On a more conventional trajectory, the same missile would have a range of about 6,700km. That would be enough to reach Alaska, but not Hawaii or California.

This test comes after a similar one on May 14th; the missile used then, also on a lofted trajectory, was thought to have a potential range of 4,500km. John Schilling of the website "38 North" believes that missile to have been a scaled-down, two-stage version of the three-stage KN-08 prototype ICBM. The smaller missile, which the North Koreans called the Hwasong-12 and which Western intelligence analysts have tentatively designated as the KN-17, was displayed during a military parade on April 15th.

After the launch on May 14th, Mr Schilling speculated that the Hwasong-12 was being used to develop the technologies and systems needed for future ICBMs. This would be cheaper and less provocative than testing the KN-08.

The North Koreans, in an announcement several hours after the July 4th launch, dubbed the latest missile the Hwasong-14, which indicates that it may be a more powerful version of the Hwasong-12. The test, as well as demonstrating greater range, could have been designed to gain additional knowledge of the engineering requirements for a warhead-carrying re-entry vehicle by flying for longer and at higher altitude. Making a warhead small enough to fit on a missile and protecting it as it plummets through the earth's atmosphere are two of the technologies needed to build a working ICBM that North Korea may not yet have mastered.

On hearing the news, Donald Trump took to Twitter to harrumph: "North Korea has just launched another missile. Does this guy have anything better to do with his life? Hard to believe that South Korea and Japan will put up with this much longer. Perhaps China will put a heavy move on North Korea and end this nonsense once and for all!"

That is unlikely. Mr Trump has been forced to admit that his earlier hopes of getting China to rein in North Korea have gone unfulfilled. Mr Trump seems also to be more aware than before that military options, while still "on the table" according to Mike Pence, the vice-president, are very much a last resort. His defence secretary, James Mattis, recently said that outright war with North Korea would be "catastrophic" and "probably the worst kind of fighting in most people's lifetimes".

In a meeting in Washington last week with South Korea's new president, Moon Jae-in, Mr Trump emphasised that he was open to dialogue with North Korea "under the right circumstances". But there seems scant prospect of that, given the zeal with which Mr Kim is pursuing his missile programme. Even a new raft of "secondary" sanctions aimed at Chinese firms and banks that do business with North Korea would be unlikely to exert sufficient pressure on Mr Kim to bring him to the negotiating table, while antagonising China.

Fighting ballistics with ballistics

One remaining possibility, albeit a risky one, is that America might threaten to shoot down North Korean missiles in their boost or ascent phase. If North Korea cannot test, it cannot build a reliable ICBM. To do this, says Michael Elleman of the International Institute for Strategic Studies, a think-tank, America and Japan would have to deploy a new generation of interceptors, which are 50% faster than the current ones, on their Aegis-class destroyers. But following the failure of a test firing in June, they are still some way from entering service. Given the speed at which North Korea's missile programme is advancing, its ICBMs may be ready before America's new interceptors are.

https://www.economist.com/news/asia/21724767-device-tested-appears-capable-hitting-alaskanorth-koreas-long-range-missile-test-alarms

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The Diplomat (Tokyo, Japan)

US B-1B Bombers Fly Over South China Sea, Drawing Chinese Protest

By Ankit Panda

July 10, 2017

China accused the United States of flaunting its military force over the South China Sea following the flights.

On Friday, two U.S. long-range strategic bombers flew over parts of the South China Sea, asserting freedom of overflight over disputed waters.

The United States Air Force sent two B-1B Lancer bombers from Andersen Air Force Base in Guam in the Western Pacific to the South China Sea for a routine flight as U.S. President Donald J. Trump prepared to meet Chinese President Xi Jinping on the sidelines of the Group of 20 meeting in Hamburg, Germany.

Friday's bomber flight comes shortly after the latest U.S. freedom of navigation operation by the U.S. Navy on the surface of the South China Sea, which involved the USS Stethem conducting an innocent passage within 12 nautical miles of Triton Island in the Paracel Islands.

The U.S. Navy conducted a similar operation in May, when the USS Dewey, another Arleigh Burkeclass guided missile destroyer, asserted high seas freedoms around Mischief Reef in the Spratly Group, the site of one of China's seven artificial islands.

The latest B-1B Lancer flyover of the South China Sea echoes a similar operation in May as well.

In another incident in May, a U.S. B-1B flying over the East China Sea, where China also is involved in territorial disputes with Japan, received warnings from Chinese authorities. China declared an air defense identification zone over much of the East China Sea in November 2013.

The Chinese Foreign Ministry reacted negatively to the flight by the B-1 bombers, with Foreign Ministry spokesperson Geng Shuang saying that "China resolutely opposes individual countries using the banner of freedom of navigation and overflight to flaunt military force and harm China's sovereignty and security."

The Chinese Defense Ministry, in a statement released to Reuters, noted that it "effectively monitors relevant countries' military activities next to China." "The Chinese military will resolutely safeguard national sovereignty and security as well as regional peace and stability," it added.

The B-1B, though often erroneously cited as a nuclear-capable bomber, has not been slated for a nuclear delivery mission since the early 1990s.

Beginning in 2007, the existing B-1 bomber fleet underwent physical conversion to a conventionalonly delivery platform — a process that was completed in 2011.

The changes to the bombers in the late-2000s physically prevent it from being reequipped for the delivery of nuclear air-launched cruise missiles or other nuclear ordnance.

The United States military has conducted surface transits by naval vessels and flyovers by military aircraft to protest excessive claims by regional states, including China.

The United States does not take any position about which South China Sea claimant state is the rightful owner of any given feature, but does see the preservation of freedom of navigation and overflight as a core interest.

http://thediplomat.com/2017/07/us-b-1b-bombers-fly-over-south-china-sea-drawing-chinese-protest/

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38 North (Washington, DC)

What is True and Not True About North Korea's Hwasong-14 ICBM: A Technical Evaluation

By John Schilling

July 10, 2017

After the frenzy of technical speculation over the successful launch of North Korea's Hwasong-14 intercontinental ballistic missile (ICBM), the dust seems to be clearing and the emerging reality is that the North has an unreliable missile that can reach Alaska or Hawaii with a single nuclear warhead, and would be lucky to hit even a city-sized target. However, with a year or two of additional testing and development, it will likely become a missile that can reliably deliver a single nuclear warhead to targets along the US west coast, possibly with enough accuracy to destroy soft military targets like naval bases. In perhaps five years, North Korea may be able to incorporate a modest suite of decoys and penetration aids to challenge US missile defenses. Let's hope US missile defenses are up to that challenge.

Contrary to the assertions of some analysts that the missile is currently capable of carrying several warheads, not just one, it may eventually be able to carry a modest suite of decoys or penetration aids, though probably not for several years. A multiple warhead capability, while theoretically

possible, would require a very lightweight warhead, which will require a lot more nuclear testing and is probably a decade in the future at best.

That said, the Hwasong-14 that flew last week was surprising in several respects. On the surface, it appeared to be a completely different missile than the one North Korea rolled out under the name of "Hwasong-14" back in 2015. On close examination, however, this new Hwasong-14 appears to be closely based on elements of several previous North Korean missiles. In fact, very little of the Hwasong-14 is truly new: it uses the same engine as the Hwasong-12, a structural technology first developed for the original Hwasong-14 and demonstrated on the Hwasong-12; it also featured an upper stage very similar in size and performance to the Hwasong-13 (itself derived from the upper stage of the Unha space launch vehicle), and probably a reentry vehicle (RV) derived from the original Hwasong-14. An estimate of how all these parts come together is shown below.

It is surprising, nonetheless, that North Korea was able to make last week's test look like a new missile by using technologies and systems they have been working with in other contexts for years. This means we can make a reasonable estimate of its performance by looking at those other systems, and comparing what we know about them to what the Hwasong-14 demonstrated last week. As was noted at the time, the Hwasong-14 was launched on a very high angle "lofted" trajectory to avoid overflying Japan, and might have reached a distance of 7,000-8,000 kilometers if launched on a maximum-range trajectory. If the Hwasong-14 is put together the way we think it is, it can probably do a bit better than that when all the bugs are worked out. The figure below shows the estimated reach of a fully developed Hwasong-14 as a function of payload weight, with the missile fired in a northeast direction from North Korea. The North Koreans won't be able to achieve this performance tomorrow, but they likely will eventually.

A range of as much as 9,700 kilometers, approximately the distance from North Korean launch sites to the US naval base at San Diego, would be possible with a 500 kg payload. And that raises an obvious question: what is that payload? Most every other North Korean long-range missile is topped with a triconic reentry vehicle sized for a single nuclear warhead about the size of the mock-up Kim Jong Un showed off last year. We're pretty sure North Korea can actually build nuclear warheads about that size. But where other missiles have visible reentry vehicles, the Hwasong-14 has a detachable payload shroud.[1] We don't know what goes inside, except that the usual triconic reentry vehicle won't fit.

Those reentry vehicles probably aren't qualified for reentry at ICBM velocities, and changing that would require an extensive test program. A faster and lower-risk approach to putting a warhead on an ICBM is to use a blunt-body reentry vehicle, like the United States did on its first Thor and Atlas ICBMs. And indeed, the original Hwasong-14 missile from 2015 sported a blunt-body RV at the tip—one that would fit almost perfectly inside the new Hwasong-14's shroud. Blunt-body RVs have their disadvantages, such as limited accuracy. But, as long as you're willing to settle for landing within a few miles of the target, they will do the work.

In the short term, that's probably all there is to it—a streamlined fairing over a blunt-body RV, capable of delivering a 500 to 600 kg nuclear payload with limited accuracy to targets on the US west coast. In the longer term, however, there may be something more. Payload shrouds are somewhat failure-prone until they have been thoroughly tested, and usually not worth the bother if all one wants to do is deliver a single warhead. Payload shrouds are designed to provide a clean aerodynamic exterior to a complex assortment of un-aerodynamic payloads.

Thus, we expect there will eventually be more than just a single warhead under the shroud. But it probably won't be multiple warheads, at least not for a decade or more. Multiple warheads of the size North Korea has displayed and can plausibly build today, along with reentry vehicles to carry them, simply wouldn't fit. To put multiple warheads inside that fairing, at a weight that would still

allow intercontinental reach, North Korea would have to develop a lightweight nuclear warhead comparable to the W-68 warhead of the US Poseidon missile. It took the United States almost 15 years to go from building the sort of nuclear weapons North Korea has today to the W-68. And while the North Korean missile program has been conducting tests at an accelerated pace, they have conducted only two nuclear tests in the past four years. So perhaps in 2030 we will see a multiple-warhead Hwasong-14, but probably not before then.

A more urgent, and more realistic, priority for North Korea would be a system of decoys and penetration aids to defeat US missile defenses. The US national missile defense system in its current state is limited and unreliable, working only about half the time in tests. But North Korea has to consider that deploying an operational ICBM would motivate the United States to improve its defenses. They can't possibly hope to build more ICBMs than the US can build missile defense interceptors. But if they can put a dozen or so effective decoys on each missile—that might be enough to maintain a credible deterrent.

This is not a trivial matter. One often hears decoys described as "mylar ballons," as if a simple child's toy would be sufficient. In reality, a toy balloon probably wouldn't survive the harsh environment of a missile launch, let alone fool a sophisticated adversary's defense. As a more realistic example, consider the British "Chevaline" decoy system, developed using the technology of the early 1970s when the United Kingdom faced a similar deterrence credibility problem against Russia's nascent anti-ballistic missile (ABM) system. This is a capability North Korea could reasonably hope to match.

It took the UK seven years and seven billion (in current year dollars) to make Chevaline work. The system reportedly shoehorned 27 decoys and their deployment mechanisms into slightly more than 250 kilograms. That's half the payload of the Hwasong-14, if North Korea is serious about targeting San Diego. Consequently, the North Koreans would probably have to accept a reduced decoy count, and make some progress on warhead weight reduction, to make it all fit. I would be very surprised if they weren't working on that already, but without a missile to work with, there is a limit to how much progress they can make.

http://www.38north.org/2017/07/jschilling071017/

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News.com.au (Surry Hills, Australia)

Australia's secret plans to have its own nuclear arsenal

By Benedict Brook

July 11, 2017

America. Russia. China. Britain. The world's most powerful countries all have nuclear arsenals — and few people know Australia was almost one of them.

Last week's successful test of a North Korean missile raised fresh fears Australia is now potentially within range of one of the rogue nation's nukes.

Yet despite being the world's third largest producer of uranium — the key ingredient in a nuclear bomb — Australia has no similar weapon to chuck back should Kim Jong-un press the big red button.

But, were it not for the rolling of Australian Prime Minister John Gorton in 1971, in a Liberal Party coup, Australia could easily have developed its own true blue, and massively deadly, nuke.

A military expert has told news.com.au, that top secret plans were so advanced Australia was considered "top of the pile" of countries expected to acquire its own nuclear arsenal.

It was 60 years ago that the last nuclear bomb was detonated in Australia, a British weapon at the Maralinga test site in South Australia.

If you look closely, evidence of Australia's plans for its own nuke remain. A few hours south of Sydney, at picturesque Jervis Bay, a small road leads into the bush. By a boat ramp is a large car park.

However, this was never designed to be a place for tourists' vehicles. Rather, it is the unfinished foundations of Australia's first commercial nuclear power station.

The public were told it would revolutionise the country's energy needs. The truth was it would enrich uranium for Australia's atomic bombs.

Associate Professor Wayne Reynolds is a defence and foreign policy expert at the University of Newcastle and author of the book Australia's Bid for the Atomic Bomb.

He says many are surprised to hear that Australia seriously looked into becoming a nuclear armed state.

"People said it was conspiracy stuff, but it wasn't — it was the atomic age," he told news.com.au.

"We wanted to have a navy; in WWII we wanted access to heavy bombers; and so we wanted nuclear weapons. We wanted to maintain a strategic leading edge."

Australia didn't want to go it alone. During WWII, British and Australian experts had worked alongside their American counterparts on the Manhattan Project to build the world's first atomic bomb.

The expectation was that the US would share the results with its allies.

"In 1946, the Americans changed that calculation by announcing they would not share any of the technology or weapons," says Prof Reynolds. "Britain and Australia were cut out from the club".

This huge rift in UK-US relations set London on a course that would lead it to test its own weapons 1000 kilometres north west of Adelaide.

"Britain were worried, they knew Russia was developing a bomb and they were desperate to catch up to defend their cities," he says.

Canberra was also worried. "The thinking was a naval fleet might try and invade. In Sydney and Melbourne we had two big cities that were very vulnerable and if you didn't have strategic strike capability then you've had it."

Many in the government harboured a desire for a joint "Empire" bomb produced between Australia, Britain, Canada and South Africa.

Despite the UK's ownership of the bombs it detonated at Maralinga, Canberra hoped aiding Britain might be a step toward its own bomb.

Certainly, no one underestimated Australia's atom ambitions.

"German, Italy, the Netherlands — all wanted nuclear weapons but Australia was top of the list because of our uranium resources, our scientists and our enrichment program," Prof Reynolds says.

However, the very success of Britain's tests only served to isolate Australia further.

In 1957, the US decided it would rather have the UK back in its nuclear club than out on an atomic limb. The US and UK now share their arsenal. "Australia was adrift," says Prof Reynolds.

So Australia took tentative steps to go it alone. This included the Lucas Heights nuclear plant on Sydney's southern fringe. Still Australia's only reactor, it began its life researching, among other things, nuclear weapons.

The Australian Nuclear Science and Technology Organisation (ANSTO), the Government body which now owns Lucas Heights, told news.com.au it is prohibited from conducting any research that could find its way into a future missile.

"ANSTO was created in 1987 by an Act that sets our mandate and specifically outlaws research or development into the design or production of nuclear weapons," a spokesman said.

"ANSTO's expertise is geared towards peaceful applications of nuclear technologies."

In the early 1960s, the Menzies Government was discussing with the US the top secret "SEATO plan 4" which could have seen American bombs on Australian soil.

"This were absolutely not known by the public and plan 4 was only declassified thirty years later," says Prof Reynolds.

With Communism on the march in Asia, plan 4 detailed Australia's potential involvement in an atomic response.

"The plans laid out scenarios such as using tactical nuclear weapons in South East Asia. What would be the implications of a nuclear blast on the Kra Isthmus or the impact on the jungle of a high yield device?"

With an almost charming understatement, foreign minister Sir Garfield Barwick told his US counterpart in 1962 that Australia nuking its neighbours, "Was a very serious step ... profoundly affecting our future political relations with Asia."

A year later, China detonated its first nuclear weapon. It boosted the voices of bomb proponents. Who would be next? Japan? India? Indonesia? Could Australia stand by if bombs were pointed at Darwin from Bali?

The Government ramped up its weapons research.

In 1968, ex-RAAF pilot Gorton became Prime Minister. The nuclear non-proliferation treaty (NPT) was already in the works. However, a big supporter of a homegrown nuclear deterrent, Gorton wanted to Australia to be on the "brink of manufacture" of a weapon, says Prof Reynolds.

"If the whole world goes pear shaped, the NPT falls apart and rogue states start shooting weapons, he wanted to know if we [could build this bomb] quickly."

Gorton gave the green light to Jervis Bay. Work began on the plant which was ostensibly for power generation.

Then, in 1971, Gorton was rolled and the Australian atomic dream died, explained Richard Broinowski of the Australian Institute of International Affairs, in a 2006 paper.

His replacement, Billy McMahon did not support the plans and construction ceased on the plant.

"As Treasurer, [McMahon] had been persuaded by officials that the 'cover' devised for the Jervis Bay reactor lacked credibility, since electricity generated there would be double the cost of electricity generated from Australian coal," Mr Broinowski says. Gough Whitlam formally ended Australia's atom ambitions by signing onto the NPT and tying the country's security to the US.

After decades of stability, the list of nuclear armed nations has increased. India, Pakistan, Israel and, of course, North Korea now possess them.

Prof Reynolds says it is unlikely Australia would seek to host nuclear bombs — its own or others. But history warns you to never say never.

"Historically, we've gone with the major powers. But if this unravels we might need a capability down here," he says."

"We have the people, the knowledge, the history, the uranium and we still have Lucas Heights."

http://www.news.com.au/technology/science/australias-secret-plans-to-have-its-own-nucleararsenal/news-story/2bcac85b0f2cbe3f7e377217d6ef999b

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ASIA/PACIFIC

The Diplomat (Tokyo, Japan)

Why Is Russia Denying That North Korea Launched an ICBM?

By Ankit Panda

July 11, 2017

North Korea definitely tested an ICBM on July 4, 2017, so why is Russia denying it did?

The United States, Japan, South Korea, and North Korea all agree that, last week, North Korea successfully flight tested an intercontinental ballistic missile (ICBM) that it calls the Hwasong-14. A U.S. government source with knowledge of the Hwasong-14 launch confirmed to The Diplomat that the United States currently assesses the missile's range as falling in the 7,500 to 9,500 kilometer range. The upper bound of that range would allow the Hwasong-14 to reach major U.S. cities on the country's west coast, including Seattle, San Francisco, and Los Angeles. By any measure, this new North Korean missile qualifies for the ICBM label.

However, this same missile, which the United States government has designated the KN-20, is not being assessed as an ICBM by Russia, which last week blocked the United Nations Security Council's condemnation of North Korea on the grounds of its disagreement about the nature of the missile and its range. China, meanwhile, has "noted relevant reports" about the Hwasong-14 launch, but has not yet called it an ICBM publicly; Beijing is "trying to get more information," according to its Foreign Ministry spokesperson.

Are there grounds for reasonable doubt that North Korea launched an ICBM? Well, not quite.

The relevant data points for extrapolating a missile's demonstrated minimum range — its apogee, range, and flight time — all came through shortly after North Korea tested the Hwasong-14 courtesy of South Korean, Japanese, and U.S. government sources. Keep in mind that North Korea tests its long-range missiles using a "lofted" trajectory, meaning that it fires them at a sharp angle to avoid overflying its neighbors. In 1998, North Korea launched a Taepodong-1 rocket technology demonstrator, overflying Japan. That test ultimately led to a negotiated moratorium on North

Korea's missile testing that broke down in 2006. But since the Taepodong-1 episode, North Korea works to avoid overflying Japan with its eastward-flying projectiles.

The July 4 missile flew to a range of 935 kilometers, exhibiting an apogee of more than 2,800 kilometers, and a flight time of 37 minutes. That missile, if flown at a minimum energy trajectory, would easily fly past the 5,500 kilometer cut-off that both the United States and Russia use to define an intercontinental-range missile. (These numbers were confirmed by the United States, Japan, South Korea, and even North Korea.) Given this was a liquid-fueled missile, North Korea could have purposefully shut off the motors earlier in flight than necessary to avoid overflying Japan or splashing down farther into its exclusive economic zone, too. This could partly explain why the upper bound of the U.S. government range estimate is greater than those proffered by some experts working with open source data. (Incidentally, the United States observed the missile on the launch pad near Pukchang Airport for about 70 minutes prior to its firing.)

The Russians, however, are maintaining that North Korea did not launch an ICBM at all, but something else entirely, based on data presumably collected by their own early warning radar systems. According to Russian intelligence assessments of the July 4 North Korean launch seen by Russia's TASS news agency, the missile supposedly flew to a range of 510 kilometers, with an apogee of 535 kilometers over a flight time of 14 minutes.

That performance would suggest something more in the class of North Korea's Pukkuksong-1 submarine-launched ballistic missile (SLBM) or Pukkuksong-2 medium-range ballistic missile (MRBM). Both missiles have demonstrated similar range and apogee numbers in previous successful test flights. We know North Korea didn't fire those missiles because the North Koreans released video and imagery of the Hwasong-14's launch and even broadcast footage showing the ICBM's stage- and shroud-separation in space. If anything, North Korea was transparent about its milestone ICBM achievement with the July 4 launch.

In line with their data on the trajectory, the Russians are calling the missile fired on July 4 an intermediate-range ballistic missile (IRBM), likely using the Intermediate-Range Nuclear Forces (INF) Treaty definition of a missile ranged between 500 and 5,500 kilometers — not the U.S. government's definition of an IRBM, which is a missile that is ranged between 3,000 and 5,500 kilometers.

There are a few possibilities to explain this. First, given that the Hwasong-14 was a two-stage missile, it is possible that Russian early warning systems only detected the missile's first stage. A U.S. government source with knowledge of the Hwasong-14 test confirmed to The Diplomat that the missile's first stage reached an apogee of 585 kilometers — a number relatively close to what Russian intelligence claims to have detected as the overall apogee for the Hwasong-14, but inexact enough to leave doubt that this was actually the case. However, if this is the case, Russia's early warning system and radars would have missed the Hwasong-14's second stage altogether. Given that the Hwasong-14's second stage is far from an object small or stealthy enough to completely evade early warning radar detection, the good faith technical shortcoming explanation for Russia's position seems unlikely. (The alternative explanation — that Russia's early warning system is deeply deficient — is more concerning for other reasons.)

A counterargument here is that Russia does have a fairly odd history with North Korean missile and nuclear tests, often offering statements that contradict the consensus view between the United States, South Korea, and Japan (and sometimes North Korea). In the past, Russian estimates have seen more projectiles than were actually launched out of North Korea; entirely missed launches; overestimated nuclear yields; and overestimated North Korea's satellite launch vehicles. (The Russian Foreign Ministry said, for example, North Korea's failed 2009 Unha-2 SLV delivered a payload into orbit when the United States said it simply splashed down in the Pacific Ocean.) It

appears that this history of the Russians presenting unique intelligence assessments on North Korean missile and nuclear developments continued last week with a particularly divergent read on the Hwasong-14's trajectory.

The other possibility, of course, is that none of this has anything to do with deficiencies in Russia's early warning capabilities or intelligence assessments. Instead, this could be political and diplomatic gamesmanship; Russia may be deliberately stalling action at the UN Security Council over the July 4 launch. This could be so for a variety of reasons, ranging from seeking a quid pro quo from the United States in other areas or out of an interest in seeing North Korea spared another round of condemnation at the Security Council.

Whatever the reasons, the Russians appear to be convincing no one that North Korea didn't successfully carry out its first-ever ICBM test flight on July 4, 2017.

http://thediplomat.com/2017/07/why-is-russia-denying-that-north-korea-launched-an-icbm/ Return to top

The Moscow Times (Moscow, Russia)

Russian General in Charge of Nuclear Weapons Resigns

Author Not Attributed

July 7, 2017

Russian President Vladimir Putin accepted the resignation this week of the general in charge of Russia's nuclear weapons arsenal, the Kommersant newspaper reported July 7.

Lieutenant General Yuri Sych, head of the Defense Ministry's 12th directorate, in charge of the storage, maintenance and launch preparation of the country's nuclear arsenal, resigned after complaining of health issues, a Kommersant source in the Defense Ministry said.

The source said that Putin secretly signed a decree accepting Sych's resignation on July 5. Major General Igor Kolesnikov has been appointed acting head.

Sych, who held his position since December 2010, told the newspaper that he will still remain at his post for several more months, and would not speculate on his possible successor.

The Defense Ministry has praised Sych, saying he has maintained a high level of safety over the nation's arsenals, without a single incident occurring during his command.

The 12th directorate is in charge of the storage of nuclear weapons, nuclear research institutes, nuclear monitoring services aimed at tracking foreign test facilities, and the test range on Novaya Zemlya, an archipelago in the Arctic Ocean.

Sych also worked with Russia's Foreign Ministry on radiation safety issues as well as nuclear non-proliferation.

As of March 1, 2017, Russia has 1,765 strategic nuclear weapons.

https://themoscowtimes.com/news/russian-general-in-charge-of-nuclear-arsenal-resigns-58327 Return to top RT (Moscow, Russia)

Russia, China: N. Korea Must Freeze Nuclear Activities, US Halt THAAD Deployment

Author Not Attributed

July 4, 2017

Moscow and Beijing have agreed that North Korea should freeze its nuclear and missile programs, while the US and South Korea should abstain from holding war games in the region, Russian President Vladimir Putin said.

"We've agreed to promote our joint initiative, based on Russian step-by-step Korean settlement plan and Chinese ideas to simultaneously freeze North Korean nuclear and missile activities, and US and South Korean joint military drills," Putin said at a press conference after meeting with China's leader, Xi Jinping, in Moscow.

"We believe that the outer world is turbulent, local conflicts are emerging constantly, such issues as the Korean peninsula problem, Syrian question, remain very complex," Xi Jinping said.

Russia's president stressed that the two countries have either the same, or very close positions on many international issues.

"We intend to further develop our foreign policy coordination," Putin said.

Moscow and Beijing stressed the importance of taking North Korea's concerns over its safety into consideration, calling them "justified."

"The two sides stress that justified North Korean concerns should be respected," a joint statement by Russia's and China's foreign ministers reads. "Other countries should make certain moves to resume the negotiations, creating a peaceful disposition and mutual trust."

"A possibility of the use of military measures to solve the problems of the Korean Peninsula must be ruled out," the joint statement stressed.

While condemning Pyongyang's nuclear and missile tests as violating UN Security Council resolutions, Moscow and Beijing urged the United States to immediately halt its deployment of THAAD anti-missile systems to South Korea.

"The sides agree that the deployment of THAAD anti-missile systems to Northeast Asia gravely damages strategic safety interests of regional powers, including Russia and China and do not contribute to the de-nuclearization of the Korean Peninsula, as well as towards establishing peace and stability in the region," the statement reads.

"Russia and China oppose the deployment of the said systems and call on the countries involved to immediately halt and cancel the process of their deployment."

Russia and China's calls for de-escalation and negotiation are clearly a step into right direction if the ongoing Korean crisis is to be untangled, Asia-Pacific defense consultant Jack Midgley believes.

"North Korea now has at least a limited ballistic missile capability; they have at least a limited nuclear weapons capability. The question is: how will the world deal with the emergence of this new set of facts," Midgley said, adding "the experience of the last 60 years is very consistent there – it's that the only way forward that actually works is to bring the parties together and to negotiate."

https://www.rt.com/news/395244-north-korea-nuclear-us-drills-stop/

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MIDDLE EAST

The Jerusalem Post (Jerusalem, Israel)

Iran Seeking Nuclear Weapons Technology, German Intel Says

By Benjamin Weinthal

July 8, 2017

Tehran spies on 'declared enemies' Israel and Jewish institutions in Federal Republic.

Damning German intelligence reports emerged in June and July revealing the Iranian regime's continued pursuit of nuclear weapons and missile technology in defiance of international sanctions and UN resolutions.

A federal intelligence report also said that the Islamic Republic targets Jewish and Israeli institutions with espionage.

According to the German state of Hamburg's intelligence agency: "there is no evidence of a complete about-face in Iran's atomic polices in 2016" [after the Islamic Republic signed the JCPOA accord with world powers in 2015, designed to curb Iran's nuclear program in exchange for sanctions relief]. Iran sought missile carrier technology necessary for its rocket program."

Germany's federal domestic intelligence agency – the rough equivalent of Shin Bet – said in its report on Tuesday: "The State of Israel, its representatives and supporters as well as members of the Jewish religious community are among the declared enemies of Iran. Even the agreement made between Iran and the Western world to settle the nuclear conflict has not changed this attitude. Therefore, Iranian intelligence-related organizations continue to spy on (pro-)Jewish and Israeli targets in Germany."

The Hamburg intelligence report cited a case involving federal prosecution of three German citizens for violations of the Federal Republic's export economic law because the suspects furnished 51 special valves to an Iranian company that can be used for Iran's sanctioned Arak heavy water reactor. The valves, the report noted, "can be used to develop plutonium for nuclear weapons." Iran pledged, under the JCPOA deal, to "dismantle the [Arak] facility," the intelligence officials wrote.

An intelligence report from the southwestern state of Baden-Württemberg stated, "Regardless of the number of national and international sanctions and embargoes, countries like Iran, Pakistan and North Korea are making efforts to optimize corresponding technology."

According to the Baden-Württemberg report, Iran sought "products and scientific knowhow for the field of developing weapons of mass destruction as well missile technology." The 181-page document cites Iran's illicit cyberware, espionage, terrorism and weapons of mass destruction procurement activities 49 times.

A telling example of Iran's evasion sanctions strategy involved the assistance of a Chinese front company. The intelligence agency wrote that a Chinese import-export company contacted a company in the southern German state that sells "complex metal producing machines." The Baden-Württemberg report outlined that the technology would aid Iran's development of ballistic missiles.

Germany's Federal Office for Economic Affairs and Export Control issued an end-use receipt for the Chinese purchase. Intelligence officials notified the manufacturer that the merchandise was slated to be illegally diverted to Iran. "This case shows that so-called indirect-deliveries across third countries is still Iran's procurement strategy," wrote the intelligence officials. Sophisticated

engineering and technological companies are situated in Baden-Württemberg and it has long been a target for illicit Iranian procurement efforts.

A third state intelligence report from June said that in the 2016, "German companies located in Rhineland-Palatinate were contacted for illegal procurement attempts by [Pakistan, North Korea and Iran]. The procurement attempts involved goods that were subject to authorization and approval on account of legal export restrictions and UN embargoes. These goods, for example, could be used for a state's nuclear and missile programs."

Germany's national intelligence agency (the Federal Office for the Protection of the Constitution or BfV) did not include Iran's activities in Baden-Württemberg, Rhineland-Palatinate and Hamburg in its report.

It is unclear why Germany's federal intelligence document omitted significant data and information on Iran's continued drive to obtain nuclear weapons technology in the states. German remains Iran's most important trade partner.

The 339-page federal document wrote that Iran has not stopped its missile and rocket programs: "The amount of evidence found for attempts to acquire proliferation-sensitive material for missile technology/ the missile program, which is not covered by the Joint Comprehensive Plan of Action, remained about the same."

The report said, however, that there was "significantly less evidence of Iranian attempts to acquire proliferation-sensitive material for its nuclear program. As far as the BfV was able to verify such evidence, it did not reveal any violation of the Joint Comprehensive Plan of Action."

According to the federal document, "The Russian Federation, the People's Republic of China and the Islamic Republic of Iran are the major players behind espionage activities that are directed against Germany. Cyberattacks can now also be attributed to presumed government agencies in Iran."

The second anniversary of the JCPOA will be marked on Friday.

http://www.jpost.com/Arab-Israeli-Conflict/German-intel-says-Iran-seeks-nuclear-weaponstechnology-499113

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Iran News Update (Pontoise, France)

The US Must Counter the Iranian Regime and Work With the Resistance

Author Not Attributed

July 12, 2017

While the US has been focused on Russia and the G20 Summit, the Iranian Regime has been expanding its military force, but what will the US and its allies in the Middle East do about it?

Lawrence J. Haas, a senior fellow at the American Foreign Policy Council, wrote an op-ed for US News in which he advised the White House to adopt a strategy to oppose the regime and support the resistance forces.

He wrote: "[This administration must] fashion a comprehensive strategy that confronts the odious regime while putting its moral authority behind the millions of Iranians who would like nothing more than to topple it."

The threat posed by the Iranian Regime towards most of the world, is in its nuclear and ballistic missile production. These weapons pose a threat to the stability of the Middle East and could eventually pose a threat to the rest of the world.

Haas wrote: "Iran's military expansionism of late encompasses a host of activities: pursuing illegal means to expand its nuclear and ballistic missile technology and expertise; continuing to test its longer range and increasingly sophisticated ballistic missile; and building underground facilities in Lebanon to manufacture missiles and other weapons for its most powerful terrorist client Hezbollah."

Whilst development of nuclear weapons technology was supposed to stop in 2015, the Iranian Resistance has revealed information that Iran still has active nuclear weapons facilities in secret locations across Iran. They are also working closely with North Korea on nuclear weapons technology.

The ballistics missiles programme, which was recently sanctioned by the US, has at least three underground facilities within Iran and at least two in Lebanon, where the Regime backs the terror group Hezbollah.

It is believed that one of the missiles being built in Lebanon, the Fateh 110 missile, can reach up to 190 miles and thereby threatens most of Israel.

Haas wrote: "All told, Tehran's expanding military capabilities present a growing threat to Washington's allies in Jerusalem, Riyadh and elsewhere, raising the prospect that, at some point, an emboldened Iran or Hezbollah will launch a war or a defensive Israel will take pre-emptive military action to reduce the threats."

Luckily, it seems that the US will be attempting to counter the threat of the Regime and work with the Resistance.

Secretary of State Rex Tillerson told the House Foreign Affairs Committee: "Our policy towards Iran, is to push back on [its regional] hegemony, contain their ability to develop, obviously, nuclear weapons and to work towards support of those elements inside of Iran that would lead to a peaceful transition of that government."

http://irannewsupdate.com/news/nuclear/3975-the-us-must-counter-the-iranian-regime-and-work-with-the-resistance.html

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PressTV (Tehran, Iran)

Syria Not Using Chemical Weapons Against Terrorists: Iran's Defense Minister

Author Not Attributed

July 2, 2017

Iran's defense minister says despite Western countries' propaganda, Syrian forces have never used chemical weapons against terrorists, who are using weapons of mass destruction in their war against Damascus.

Addressing a ceremony held to mark the 30th anniversary of a chemical attack against the Iranian city of Sardasht, Brigadier General Hossein Dehqan said during the past few days, 3,000-4,000 sorties have been conducted over the region by countries like the UK and Italy, who have

announced that the Syrian government is planning to use chemical weapons in its future operations.

"The Islamic Republic of Iran announces that the Syrian government is not after using chemical weapons and this claim (that the Syrian government has used chemical weapons) by some individuals who regard themselves as the rulers of the world is questionable," he added.

Dozens of people were killed in a chemical attack in the Syrian town of Khan Shaykhun in Syria's northwestern province of Idlib on April 4.

The United States and its allies were quick to accuse the Syrian government forces of carrying out the attack. The Syrian army; however, said that "it has never used them (chemical weapons), anytime, anywhere, and will not do so in the future."

Pointing to the US support for terror groups in the Middle East, the Iranian defense minister said the world is concerned that terrorists have combined terrorism and war with weapons of mass destruction.

He added that Takfiris are using weapons of mass destruction; however, some countries are cooperating with these terrorists instead of countering them.

The Iranian minister criticized some countries for claiming that they were countering terrorists at a time that terror groups were provided with financial support.

The Islamic Republic is a victim of terrorism and chemical weapons, Dehqan said, adding, "We have always expressed our objection to producing, stockpiling and use of weapons of mass destruction."

He emphasized that during the Iraqi imposed war on Iran in the 1980s, the Islamic Republic never used weapons of mass destruction and Iran's stance in this regard was unchanging.

Dehqan said 111 civilians lost their lives and more than 8,000 people were injured in the chemical attack on the Iranian city of Sardasht on June 28, 1987 by Iraq during the rule of the executed Iraqi dictator, Saddam Hussein.

Sardasht was the third populated city in the world, after Japan's Hiroshima and Nagasaki, to be deliberately targeted with weapons of mass destruction. It was also the first city in the world to be attacked with poisonous gas.

The Iranian defense minister further expressed concern over the ongoing situation in the region and warned that acts of terror would result in "terrible consequences" for the international community.

Dehqan added, "Weapons of mass destruction have never brought about security, but are used for killing and creating human catastrophe."

http://www.presstv.ir/Detail/2017/07/02/527213/Iran-Syria-Sardasht-Hossein-Dehqanweapons-mass-destruction

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The Washington Free Beacon (Washington, DC)

Report: Iran Building Long-Range Ballistic Missiles in Syria

By Adam Kredo

July 12, 2017

Russia, North Korea helping Iran manufacture missiles in Syria

Iran is said to be building new long-range ballistic missiles at a Syrian weapons factory identified by the United States as developing non-conventional weaponry, according to regional reports alleging that Russia and North Korea are aiding in the endeavor.

The Syrian opposition news website Zamanalwsl.net recently published multiple reports and pictures of a weapons factory in Syria that it claims is under direct control of Iran.

The reports appear to confirm other recent news articles indicating that Iran has begun manufacturing advanced missile technology in Syria with permission from embattled President Bashar al-Assad.

The reports claim that Iran is constructing long-range ballistic missiles in a factory operating under the Syrian Scientific Studies and Research Center, which the United States had identified as the key government agency behind the country's contested non-conventional weapons work, including chemical weapons.

Assad is reported to have visited the Iranian factory recently, where he met with Iranian and Syrian weapons experts, according to a translation of the articles conducted by the Middle East Media Research Institute, or MEMRI.

"The facility is producing long-range missiles as well as M600 ballistic missiles, which are a Syrian version of the Iranian Fateh 110 missile," according to MEMRI's readout of the report. "This facility has a branch in western Hama province for producing chemicals, and that that there is a Russian military base in the region, where North Korean officers once served."

The facility is said to be shrouded in secrecy, despite evidence that agents from Russia, North Korea, and Iran are freely moving around the site.

http://freebeacon.com/national-security/report-iran-building-long-range-ballistic-missiles-syria/ Return to top

INDIA/PAKISTAN

The Nation (Lahore, Pakistan)

Pakistan, India boycott global treaty banning nuclear weapons

Author Not Attributed

July 7, 2017

A global treaty banning nuclear weapons was adopted at the United Nations on Friday despite opposition from the United States, Pakistan, India and other nuclear powers that boycotted negotiations.

The treaty was adopted by a vote of 122 in favour with one country - NATO member The Netherlands voting against - while Singapore abstained.

Loud applause and cheers broke out in the UN conference hall following the vote that capped three weeks of negotiations on the text providing for a total ban on developing, stockpiling or threatening to use nuclear weapons.

Nuclear-armed states have dismissed the ban as unrealistic, arguing it will have no impact on reducing the global stockpile of 15,000 atomic weapons.

"Is there anyone that believes that North Korea would agree to a ban on nuclear weapons?" asked US Ambassador Nikki Haley when negotiations began in March. "There is nothing I want more for my family than a world with no nuclear weapons, but we have to be realistic."

But supporters hailed an historic achievement

"We have managed to sow the first seeds of a world free of nuclear weapons," said Costa Rica's ambassador, Elayne Whyte Gomez, the president of the UN conference that negotiated the treaty.

Led by Austria, Brazil, Mexico, South Africa and New Zealand, 141 countries joined in drafting the treaty that they hope will increase pressure on nuclear states to take disarmament more seriously.

None of the nine countries that possess nuclear weapons - the United States, Russia, Britain, China, France, Pakistan, India, North Korea and Israel - took part in the negotiations or the vote.

Even Japan - the only country to have suffered atomic attacks, in 1945 - boycotted the talks as did most NATO countries.

No more prestige

Nuclear powers argue their arsenals serve as a deterrent against a nuclear attack and say they remain committed to the nuclear Non-Proliferation Treaty (NPT).

The decades-old NPT seeks to prevent the spread of atomic weapons but also puts the onus on nuclear states to reduce their stockpiles.

Impatience, however, is growing among many non-nuclear states over the slow pace of disarmament as are worries that weapons of mass destruction will fall into the wrong hands.

Disarmament campaigners say the treaty will go a long way in increasing the stigma associated with nuclear weapons and will have an impact on public opinion.

"The key thing is that it changes the legal landscape," said Richard Moyes, director of the Britishbased organisation Article 36.

"It stops states with nuclear weapons from being able to hide behind the idea that they are not illegal."

"We hope that today marks the beginning of the end of the nuclear age," said Beatrice Fihn, director of the International Campaign to Abolish Nuclear Weapons.

"It is beyond question that nuclear weapons violate the laws of war and pose a clear danger to global security."

Opponents believe the treaty will fail to advance nuclear disarmament.

"We are very critical of this movement because it will give false hopes" and create unreasonable expectations, said a diplomat from a country opposed to the ban.

The treaty will be open for signatures as of September 20 and will enter into force when 50 countries have ratified it.

http://nation.com.pk/national/07-Jul-2017/pakistan-india-boycott-treaty-banning-nuclearweapons

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The Diplomat (Tokyo, Japan)

Pakistan Tests Its Nasr Short-Range Ballistic Missile System, Improving Range

By Ankit Panda

July 10, 2017

Pakistan extends the Nasr's range by 10 kilometers. Is that meaningful?

Last week, as the world's attention zeroed in on North Korea's first-ever launch of an intercontinental ballistic missile, another Asian country tested a much shorter-range nuclear-capable system. On July 5, Pakistan carried out a flight test of its Nasr (Hatf-IX) short-range surface-to-surface ballistic missile.

The Nasr is Pakistan's delivery platform for low-yield nuclear weapons (sometimes called "tactical" nuclear weapons) and has been in development since the mid-2000s. The expected nuclear payload of the Nasr is estimated to be in the sub-kiloton range.

According to a statement released by Pakistan's Inter-Services Public Relations (ISPR), Pakistan concluded a "series of training launches and tests" last week, verifying "new technical parameters" for the Nasr systems. The primary new additions include a maximum range extension, from 60 kilometers to 70 kilometers, and "flight maneuverability."

The ISPR statement does not clarify if the improved maneuverability was demonstrated in the missile's terminal stages or possibly involves some sort of terrain avoidance feature during flight.

The released statement does note that these new parameters "will augment credible deterrence against [the] prevailing threat spectrums more effectively, including anti-missile defenses." India, Pakistan's primary adversary, has been developing a range of ballistic missile defense platforms, raising concerns in Pakistan about the survivability and penetration of its own nuclear delivery systems.

Earlier this year, Pakistan tested the Ababeel medium-range ballistic missile, which is capable of delivering multiple independently targetable reentry vehicles and addresses similar concerns about ballistic missile defense.

The range-extension of the Nasr may seem modest, but is nevertheless significant as it provides a greater degree of survivability for Pakistan's Nasr batteries, allowing them to fire at targets from further into Pakistani territory.

Indeed, if India ever does shift its nuclear strategy to allow for preemptive counterforce, Pakistan would seek to ensure that its Nasr batteries are farther out of the reach of India's long-range intelligence, surveillance, and reconnaissance network to make detection more challenging as well.

While the Nasr has been envisaged as a counterforce platform and Pakistan's "Cold Start" killer, the range-extension would presumably also allow Pakistan's Nasr batteries to have a fighting chance as a more effective countervalue system further up the ladder of nuclear escalation, provided they had not already been destroyed by Indian counterattacks.

The only major Indian city that would come within the Nasr's range is Amritsar in Punjab; an extended strike range would presumably allow Nasr batteries to strike across the international boundary to hit most of Amritsar while still remaining up to 40 kilometers inside Pakistani territory. (The Nasr's previous 60 kilometer range, however, already allowed for this possible contingency.)

Last week's Nasr test is the first since September 2014, when Pakistan carried out a full salvo launch, proving a 60 kilometer range and also testing an "in-flight maneuver capability," according to ISPR. Pakistan had also tested the Nasr in 2013, largely along the same parameters. Both the 2013 and 2014 tests referenced in-flight maneuverability.

Pakistan's Chief of Army Staff General Qamar Javed Bajwa witnessed the latest test-launch of the Nasr. Bajwa highlighted the Nasr's primary deterrent purpose against India, noting that "Nasr has put cold water on Cold Start," referencing India's strategy for rapid conventional mobilization using mechanized divisions into Pakistani territory in an attempt to defuse a crisis under the nuclear threshold.

It is noteworthy that this Nasr test is the first since India's Chief of Army Staff General Bipin Rawat publicly acknowledged the existence of Cold Start in an interview earlier this year. Prior to Rawat's acknowledgement, with some exceptions, the Cold Start doctrine had not been publicly acknowledged by the Indian Army, pending sanction from India's political leadership. "Cold Start doctrine exists for conventional military operations," Rawat noted.

Back in 2015, Pakistani Foreign Secretary Aizaz Chaudhry had clarified the conditions under which Pakistan would use its low-yield nuclear weapons. Chaudhry's statements marked political sanction for Pakistan's targeting plans with the Nasr against Indian mobilization into Pakistani territory under "Cold Start."

http://thediplomat.com/2017/07/pakistan-tests-its-nasr-short-range-ballistic-missile-systemimproving-range/

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Financial Express (Uttar Pradesh, India)

India Modernising Nuclear Arsenal With Eye On China, Says US Experts

Author Not Attributed

July 17, 2017

India continues to modernise its atomic arsenal with an eye on China and the country's nuclear strategy which traditionally focused on Pakistan now appears to place increased emphasis on the Communist giant, two top American nuclear experts have said.

India continues to modernise its atomic arsenal with an eye on China and the country's nuclear strategy which traditionally focused on Pakistan now appears to place increased emphasis on the Communist giant, two top American nuclear experts have said. An article published in the July-August issue of the digital journal- After Midnight has also claimed that India is now developing a missile which can target all of China from its bases in South India. India is estimated to have produced enough plutonium for 150–200 nuclear warheads but has likely produced only 120–130, wrote Hans M Kristensen and Robert S Norris in the article- "Indian nuclear forces 2017".

India's nuclear strategy, which has traditionally focused on Pakistan, now appears to place increased emphasis on China, the two experts claimed. While India has traditionally been focused

on deterring Pakistan, its nuclear modernisation indicates that it is putting increased emphasis on its future strategic relationship with China," they wrote. "That adjustment will result in significantly new capabilities being deployed over the next decade that may influence how India views nuclear weapons' role against Pakistan," they said. Noting that India continues to modernise its nuclear arsenal with development of several new nuclear weapon systems, the two experts estimate that New Delhi currently operates seven nuclear-capable systems: two aircraft, four land-based ballistic missiles, and one sea-based ballistic missile. "At least four more systems are in development. The development program is in a dynamic phase, with long-range land- and sea-based missiles emerging for possible deployment within the next decade," it said.

India is estimated to have produced approximately 600 kilograms of weapon-grade plutonium, sufficient for 150–200 nuclear warheads; however, not all the material has been converted into nuclear warheads, it said. Based on available information about its nuclear-capable delivery force structure and strategy, we estimate that India has produced 120–130 nuclear warheads, the article said adding that the country will need more warheads to arm the new missiles it is currently developing. Kristensen and Norris said that the two-stage, solid-fuel, rail-mobile Agni-2, an improvement on the Agni-1, which can deliver a nuclear or conventional warhead more than 2,000 kilometres is probably targeted on western, central, and southern China.

Although the Agni-4 will be capable of striking targets in nearly all of China from northeastern India (including Beijing and Shanghai), India is also developing the longer-range Agni-5, a three-stage, solid-fuel, rail-mobile, near-intercontinental ballistic missile (ICBM) capable of delivering a warhead more than 5,000 kilometres (3,100-plus miles), it said. "The extra range will allow the Indian military to establish Agni-5 bases in central and southern India, further away from China," the research article said.

http://www.financialexpress.com/india-news/india-modernising-nuclear-arsenal-with-eye-onchina-says-us-experts/761301/

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Voice of America (Washington, DC)

Pakistan Enhances Range of Controversial 'Tactical' Nuclear Weapon

By Ayaz Gul

July 5, 2017

Pakistan's military announced Wednesday that it has successfully undertaken a series of flight tests of its battlefield nuclear-capable NASR missile this week, enhancing the rocket's flight maneuverability and extending its range to 70 kilometers from 60.

"This weapon system will augment credible deterrence against prevailing threat spectrum more effectively, including anti-missile defenses. NASR is a high precision weapon system with the ability of quick deployments," the Pakistan army's media wing said when it released details of the flight testing process.

The development of Pakistani tactical nuclear weapons is a source of concern for the United States because their smaller size increases the risk of a nuclear conflict with rival India, non-proliferation experts say.

Pakistani officials say that smaller weapons would deter their bigger neighbor from imposing a sudden, limited and lightning assault with conventional forces under New Delhi's "Cold Start" doctrine.

Pakistan army Chief General Qammar Javed Bajwa, who has witnessed the Nasr flight tests, referred to the Indian doctrine.

"Nasr has put cold water on Cold Start. War must be avoided at all costs and our strategic capability is a guarantee of peace against a highly militarized and increasingly belligerent neighbor," the army statement quoted Bajwa as saying.

"Our [nuclear] capability is only meant to ensure, no one thinks war remains an option," the general said.

Pakistan's relations with India have deteriorated in recent years and military clashes along the disputed Kashmir border have lately become routine.

The disputed Himalayan region has triggered two of the three wars between India and Pakistan and it remains the primary source of regional tensions.

https://www.voanews.com/a/pakistan-enhances-range-of-controversial-tactical-nuclearweapon/3929249.html

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COMMENTARY

Bulletin of the Atomic Scientists (Chicago, IL)

The Nuclear Ban Treaty: A Missed US Opportunity That Can Be Redeemed In September

By Lawrence Korb

July 10, 2017

By not just refusing to endorse the new UN treaty on the prohibition of nuclear weapons but also to even participate in the negotiations that led up to its adoption, the Trump administration has undermined the United States' moral standing in the world and jeopardized its national security by doing nothing to diminish the prospects of a nuclear war.

This treaty, which delegates to the UN approved last week by a vote of 122 to 1, delegitimizes nuclear weapons, providing for a total ban on developing, stockpiling, or threatening to use nuclear weapons. It will enter into force 90 days after it has been ratified by 50 countries; the signing period starts on September 20. In many ways, this treaty is a logical follow-on to existing treaties that have limited or banned other weapons of mass or indiscriminate destruction, among them the Nuclear Non-Proliferation Treaty (NPT) and the treaties banning biological and chemical weapons, landmines, and cluster bombs, all of which have been adopted by the international community over the past 40 years.

The Trump administration's UN ambassador, Nikki Haley, claimed back in March of this year, when the nuclear ban treaty talks began, that the process was unrealistic and would not reduce the current global stockpile of about 15,000 nuclear weapons. As Haley put it, "We have to be realistic, is there anyone who thinks that North Korea would ban nuclear weapons?" Fortunately, more than 3,700 scientists, including 30 Nobel Laureates and a former Secretary of Defense, ignored her and signed an open letter supporting the negotiations.

It is also fortunate that the United States did not take this position when the UN in 1968 enacted the NPT, which prohibited the signatories who did not possess nuclear weapons from acquiring them and called on the nuclear powers to begin removing their stockpiles. This treaty has become the

legal basis for the United States and the world community to place sanctions on Iran and North Korea for developing nuclear weapons; after all, both nations had ratified the treaty. And the UN has continued to place sanctions on North Korea, even though that nation withdrew from the treaty after President Bush placed it on the axis of evil.

It is also fortunate that people like Haley did not accompany President Reagan to Reykjavik, where he offered to get rid of all US nuclear weapons, if the Soviets did the same. The deal fell through because Soviet leader Mikhail Gorbachev conditioned his acceptance on the United States cancelling the Strategic Defense Initiative, a missile defense system that Reagan refused to give up. Nonetheless, this proposal gave the United States the moral high ground and led to several agreements with Russia, each of which significantly reduced the nuclear arsenals of both sides.

It's also a good thing that Haley was not part of the negotiations establishing the chemicals weapons treaty; she might have undermined that treaty by arguing that the negotiations were misguided, because no one believed that countries like Syria or Iraq would really give up their chemical weapons.

American nonparticipation in this new global treaty reinforces the image of the United States as a global outlier; it has not yet ratified the Comprehensive Test Ban Treaty (CTBT) or the treaty banning landmines, not to mention the Law of the Sea convention.

Moreover, while the treaties banning biological and chemical weapons have not been completely adhered to, these treaties provide the legal basis for taking action against nations that violate them. Just recently, the Trump administration launched 59 cruise missiles against Syria, because the Assad regime used chemical weapons against those fighting to overthrow the regime. The attack that Trump ordered was applauded at home and abroad—precisely because it was seen as an effort to enforce the longstanding ban on and norm against the use of chemical weapons.

The nuclear weapons ban treaty will not, in the short term, eliminate the existing nuclear weapons currently held by nine countries. As former Defense Secretary William Perry has pointed out, however, the treaty is an important step toward delegitimizing nuclear war as an acceptable risk of modern civilization, and it creates a strong moral imperative: Thou shalt not possess nuclear weapons.

The Trump administration should not only vote in September to approve the treaty but also try to convince the world's other eight nuclear powers, many of whom are our allies, to do the same. Obviously this treaty will not rid the world of nuclear weapons in the immediate future. However, its adoption will help lay the groundwork for their eventual abolishment, and if the world's other nuclear powers give up their weapons, it will be safe for the United States to do the same. Moreover, the administration should work with the Senate to get it to ratify the CTBT and landmine treaties and continue to work with the international community to enforce the existing treaties banning these illegal weapons. Finally, the administration should resume negotiations with Russia to extend New START, which expires in 2021.

http://thebulletin.org/nuclear-ban-treaty-missed-us-opportunity-can-be-redeemed-september10939

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Defense One (New York, NY)

At Trump-Putin Meeting, Start with New START

By Kingston Reif and Maggie Tennis

July 5, 2017

If the treaty is allowed to disappear, so will the Pentagon's best tools for divining facts about the Russian nuclear arsenal.

President Trump apparently has "no specific agenda" for his first in-person meeting with Russian President Vladimir Putin, slated to occur this week on the sidelines of the G-20 Summit meeting in Hamburg, Germany. So we'd like to suggest one: stabilizing the increasingly troubled relationship between the world's two largest nuclear powers, beginning by extending the landmark New Strategic Arms Reduction Treaty, or New START.

Tensions between the U.S. and Russia have worsened over the past few years, thanks to Moscow's election interference, annexation of Crimea, continued destabilization of Ukraine, and support for the Assad regime in Syria. Nevertheless, the two countries continue to share common interests. In particular, as the possessors of over 90 percent of the roughly 15,000 nuclear weapons on the planet, they have a special responsibility to avoid direct conflict and reduce nuclear risks. The downward spiral in relations makes these objectives all the more urgent.

One of the few remaining bright spots in the U.S.-Russia relationship is New START. Signed in 2010, the treaty requires each side to reduce its deployed strategic nuclear forces to no more than 1,550 warheads and 700 delivery systems by 2018. It also includes a comprehensive suite of monitoring and verification provisions to help ensure compliance with these limits. So far, both sides have abided by its terms, a good measure of how much they value its contributions to bilateral stability, predictability, and transparency.

The agreement, which is slated to expire in 2021, can be extended by up to five years if both Moscow and Washington agree. But if it is allowed to lapse, there will be no limits on Russia's strategic nuclear forces; moreover, the United States would have fewer tools with which to verify the size and composition of the Russian nuclear stockpile. This could lead military planners to make worst-case assessments that might help justify a costly and potentially unnecessary surge in nuclear and conventional weapons procurements.

For these reasons and more, the U.S. military and U.S. allies continue to strongly support the agreement. For example, Gen. John Hyten, who leads U.S. Strategic Command, told Congress in March that he is a "big supporter" of New START. Hyten added that "bilateral, verifiable arms control agreements are essential to our ability to provide an effective deterrent." It seems likely the Pentagon would welcome an extension.

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The News & Observer (Raleigh, NC)

Congress risks Reagan's legacy on nuclear arms

By Alexandra Bell

July 7, 2017

Almost 30 years after the end of the Cold War, duck-and-cover drills are distant memories for most Americans. Unfortunately, Russia's nuclear arsenal still poses an existential threat to the United States. Over the years, the United States has worked tirelessly to build an intricate system of treaties and agreements aimed at controlling and reducing the number of nuclear weapons pointed at this nation, including places like the Research Triangle. Many of the tools and measures were directly created or fostered by President Ronald Reagan, who famously said, "A nuclear war can never be won and must never be fought."

Guided by that idea, President Reagan directed the negotiation of the Intermediate Nuclear Forces Treaty. This groundbreaking achievement eliminated an entire class of U.S. and Russian nuclear weapons, specifically intermediate-range nuclear missiles. More recently, the 2010 New Strategic Arms Reduction Treaty built on the success of previous administrations, to limit the United States and Russia to 1,550 deployed nuclear warheads and 700 deployed launchers (land-based missiles, bombers and submarines). It also permits U.S. military inspectors on the ground in Russia, giving us a real-time view of their strategic nuclear arsenal. That allows us to trust, but verify Russian nuclear reductions.

These agreements, along with other nuclear agreements, have received broad, bipartisan support. Preventing a nuclear war, it seemed, was too important to get bogged down in politics.

Fast forward to present day, where Congress is considering the 2018 National Defense Authorization Act. Provisions in the House and Senate versions of the bill threaten to gut the treaties, programs and agreements that have kept a lid on Russian nuclear activities since the Cold War.

Of course, the arms control regime is not without problems. Russia is currently in violation of the INF Treaty and U.S. attempts to fix the problem have been unsuccessful. Despite the ongoing violation, our military leaders have repeatedly affirmed that INF continues to be in the U.S. national security interest. To deal with this problem, the NDAA takes a "throw the baby out with the bathwater" approach and would put the United States on its path to violate INF by developing a similar intermediate-range missile. Instead of legislating our way into a bigger crisis, Congress needs to push the administration to find a diplomatic solution.

The House version of the bill would also restrict President Trump's ability to extend New START after its expiration date beyond the 2021 deadline, if the president cannot certify that issues with INF have been resolved. That means the United States would throw away a fully-functioning, military-backed treaty that is providing much-needed stability. The U.S.-Russian relationship is already fraught with tension. Why would our elected leaders choose to increase the risk of miscalculation between U.S. and Russian strategic nuclear forces?

Defying any reasonable logic, the House version of the bill would also limit our ability to dismantle nuclear weapons that have already been retired. We live in an era when terrorists are determined to acquire weapons of mass destruction. It is hard to fathom why political leaders would want to signal to the world that there is no need to rush the dismantlement of unneeded nuclear weapons.

At the same time, both Houses will likely approve a vastly oversized budget to modernize our nuclear weapons infrastructure. To be sure, we need to make the proper investments in maintaining a safe, secure and effective nuclear arsenal, but what some lawmakers are proposing

now is closer to the beginning of a new nuclear arms race. Indeed, through the NDAA, North Carolina's politicians are now in a position to dismantle the very organizations and institutions that helped keep us out of a nuclear war.

For the last 30 years, American leaders from both parties have taken bold steps to reduce nuclear threats facing our homeland. These efforts have made us safer, and they need to be preserved. Sens. Richard Burr, Thom Tillis, and the 13 North Carolina Representatives all need to hear this from their constituents. They need to know that North Carolinians did not send them to Washington to start a new Cold War. They need to know that President Reagan's nuclear legacy is worth saving.

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Foreign Policy (Washington, DC)

How to Reason With a Nuclear Rogue

By Jon Wolfsthal

July 12, 2017

A country bent on threatening the United States with annihilation develops nuclear weapons and the means to deliver them from Asia to the U.S. homeland, putting America and its allies, including Japan and South Korea, at grave risk. It is clear that only grave consequences will come from ignoring this danger any longer, but taking military action in the vain attempt to eliminate the program threatens to provoke unspeakable destruction.

No, this is not an assessment of North Korea in 2017, but of China in 1964, the year China first tested a nuclear weapon. Then, it was called Red China, and was widely considered part of a communist wave bent on global domination. You think North Korean leader Kim Jong Un says crazy things? Chairman Mao Zedong famously declared, "I'm not afraid of nuclear war. There are 2.7 billion people in the world; it doesn't matter if some are killed. China has a population of 600 million; even if half of them are killed, there are still 300 million people left."

Then, as now, voices called for strength and resolve and pushed for military action to surgically remove the nuclear capability our enemy had developed. Failure to act, it was argued, would create a near-certain risk of nuclear destruction. At a minimum, the United States would be under constant threat of nuclear blackmail, undermining the security of our allies in East Asia so greatly that they themselves would surely have to go nuclear.

Of course, deterrence did work, the countries avoided war, and America and its allies learned to manage a complex deterrent relationship with China, to our mutual advantage. No one believes we will become strong trading partners with North Korea, but many of the ideas put forward in 1964 are similar to the ones heard today, and need to be taken with a grain of salt. Then, as now, few experts had been to the country in question or met with its leaders, and little was known about what it really wanted and how it would act over the long-term.

I have written before about the terrible problem President Donald Trump and the United States inherited on North Korea. It is worse than the terrible problem President Barack Obama inherited from President George W. Bush, which was worse than the one Bush inherited from President Bill Clinton. There are no easy solutions to North Korea's nuclear and missile programs, and anyone who tells you differently is selling something. Nine months ago, I also helped write the transition memo to Trump (sorry, no link to this one) and his incoming national security team, which made these terrible choices clear. The incoming team understood that Kim Jong Un's programs were progressing despite the United States doing every responsible thing it could to impede their advance. The incoming team also knew that we had more ways to put pressure on China. Those steps, now under consideration, might yet bring North Korea back to the negotiating table.

This is where the problem goes from occupational hazard of being president to self-inflicted wound. Well aware of North Korea's program and trajectory, Trump tweeted in January that a North Korean intercontinental ballistic missile "won't happen." He staked the credibility of his office and country on this claim and was wrong, severely straining our believability not only in Asia, but globally. Obama received a lot of criticism for his Syrian "red line." Despite the removal of many tons of chemical weapons from Syria, the consequences of Obama's actions, or lack of them, in Syria are part of his legacy. When a president makes declaratory statements, he is spending America's hard-won reputation. While Trump took widely supported action in response to a chemical weapons attack by Syrian President Bashar al-Assad, other bluffs have been called with no response. None of these bluffs have been more visible and ill-advised than the one called by North Korea on July 4, when the country tested a missile with intercontinental range. But North Korea is not the only country watching and learning.

Kim has decided that his survival depends on possessing long-range missiles that can target the United States. While the United States has taken steps that have slowed this program down and made it more expensive and less reliable, nothing can prevent North Korea from further developing its missile and nuclear programs unless the North wants to stop. While military strikes could slow the program down, such strikes would certainly unleash a second Korean War, devastating a country we are legally bound to protect and defend.

China has been perpetually unwilling, without facing restrictions on its access to the U.S. banking system, to put enough pressure on North Korea to force it to confront a real choice on its nuclear and missile efforts. Recent steps by the Trump administration to ratchet up the pressure on China are welcome, but too late to head off the ICBM Kim sought for so long. It remains to be seen, even if faced with a more stark choice between business with the United States or North Korea, how far China would go in risking the collapse of the North Korean state on its border. The most pressing problem is not how to stop the program, but how to deal with its existence.

Having analyzed North Korea's program for close to 30 years, I am now unclear on what America's current policy toward North Korea is. The confused response to date by the Trump team is clear cause for concern among our allies in the region. And if someone who has worked on Korean policy for decades is unsure what we are doing, how can we expect North Korea to accurately understand what we are up to, where our priorities lie, and what our endgame is?

Now that Trump's bluff has been called, what credibility do deterrent statements to North Korea or reassurance statements to our allies have? Trump may well feel he has to respond forcefully to compensate for his gaffe, but even if he ignores it entirely, our friends and enemies won't. The job of deterrence and reassurance is a lot harder today under Trump than it was just a few days ago.

As with China 50 years ago, the situation leaves only one real option: deterrence. North Korea is not a suicidal state. Far from it. Their pursuit of nuclear weapons and missiles appears driven, as far as we can divine, from a desire to preserve the regime. What remains unclear is how North Korea will behave now that it has demonstrated an ability to hit U.S. territory. The answer may be: It will behave similarly to how it has behaved for decades, in light of its ability to deter a U.S. conventional attack by holding Japan and South Korea hostage. The North has avoided steps that risk full-scale war, but is eager to undermine the U.S.-South Korean alliance, and damage the leadership in South

Korea, including through blatant acts of aggression. But the American security community has been focused for so long on negotiating an end to North Korea's program that we have not done the hard work of figuring out how to successfully manage the much more complex deterrent relationship now emerging.

This situation satisfies no one. It admits that we cannot prevent North Korea from having nuclear capabilities, at least for now. But it does not mean, as others might suggest, that the goal of denuclearizing North Korea is dead. That must remain the goal of the United States and its partners, but we must accept that it will take time to realize, and in the meantime, there are real dangers that must be prevented from unfolding.

First, we must decide what we want to deter North Korea from doing with its newly acquired capabilities. My personal list starts with making clear that North Korea can never use nuclear weapons or missiles, and that it should not conduct any live fire tests with nuclear weapons. With the North having acquired the ability to hit the United States, allies in the region will be concerned about what is known in deterrence speak as "decoupling." Now that North Korea can hit American territory, leaders in Japan and South Korea will understandably worry whether the United States will trade Seattle to protect Seoul, or risk Los Angeles for Tokyo. Paris and Berlin had the same worry during the cold war, and we eased it only through great effort and investment. Making clear, declaratory statements that America is prepared and willing to back up its allies, and repeating them with conviction, is critical to any successful deterrent and reassurance strategy. Sadly, this is not Trump's forte. He and his cabinet need to get better at it, and soon.

In addition, U.S. policy should be to consider any attempt by North Korea to sell nuclear weapons or nuclear weapon-usable materials (enriched uranium or plutonium) an act of aggression against the United States that would require a direct response. Similarly, we must determine what we will do if and when North Korea seeks to export its ever-increasing ballistic missile technology, and where we should draw limits on what we will and will not be prepared to accept. North Korea cannot be allowed to become an Amazon.com for any would-be nuclear state.

Lastly, we must make clear that North Korea's nuclear capabilities are not a license to take military action or conduct cyber operations against the United States or its allies. We should and must continue to confront North Korean actions that threaten us or undermine the security of our allies and the stability of the region. These may not require massive military responses, but nuclear weapons for North Korea cannot be tantamount to a get-out-of-jail-free card. Just as with China and the Soviet Union, we must confront the North at the sub-strategic level while working to manage the risk of escalation. I remain skeptical that this will require the United States to redeploy nuclear weapons to South Korea, but it will demand greater investments in other capabilities.

At the same time, we have to accept that the game has changed. The dangers of a military conflict between the United States and North Korea have global implications. This means the United States and North Korea must begin immediate talks to avoid such conflicts, and to communicate directly to North Korea's leaders exactly what actions would require a direct U.S. military response. We have had to do this as other states gained nuclear capabilities, because failure to do so left too much to chance. This is no concession, but self-preservation.

This list is not exhaustive, but the president, his cabinet and advisors, and our leaders in Congress need to begin the long-overdue conversation about what North Korean actions we seek to prevent. Unlike Trump's tweets, our conclusions need to be specific and we need to back them up, lest confidence in U.S. commitments — to deter our enemies and protect our allies — gets even weaker.

The good news (Korea watchers could all use some) is that U.S. leaders and security officials have dealt with this challenge before. When the Soviet Union crossed the nuclear threshold in 1949,

some thought war was inevitable. When China did the same in 1964, similar fatalism was common. The process of nonproliferation has never been a certain one, and now that efforts by four successive U.S. presidents have failed to prevent North Korea from directly threatening the United States, we need to to begin seeking to understand the country we are dealing with and to ensure that it understands us.

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ABOUT THE USAF CUWS

The USAF Counterproliferation Center 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 Director for Nuclear and Counterproliferation (then AF/XON), now AF/A5XP) and Air War College Commandant established the initial manpower 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.

The Secretary of Defense's Task Force on Nuclear Weapons Management released a report in 2008 that 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." As a result, 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 continuing education through the careers of those Air Force personnel working in or supporting the nuclear enterprise. This mission was transferred to the Counterproliferation Center in 2012, broadening its mandate to providing education and research to not just countering WMD but also nuclear deterrence.

In February 2014, the Center's name was changed to the Center for Unconventional Weapons Studies 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.

The CUWS'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.