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**UNCONVENTIONAL  
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## **Feature Item**

***“Between the Shield and the Sword: NATO’s Overlooked Missile Defense Dilemma”***. Authored by Tytti Erasto; published by the Ploughshares Fund; May 2017; 32 pages.

<http://www.ploughshares.org/sites/default/files/resources/Between-the-Shield-and-the-Sword-May-25-2017.pdf>

The expansion of the U.S. anti-missile system in Europe should be paused. This would pose no risk to North Atlantic Treaty Organization (NATO) security, as there is no nuclear missile threat that would warrant the new interceptor site that is now being built in Poland. Rather than the stated security concerns, the project is mainly driven by unstated political motives: Poland wants the site for the purpose of additional reassurance against Russia, even though the planned interceptors do not have the ability to thwart a Russian ballistic missile attack.

The original purpose for the anti-missile system in Europe was to counter the alleged threat of nuclear-armed missiles from Iran, and the system should remain commensurate with that purpose. The guiding principle of the European Phased Adaptive Approach (EPAA)—a plan for NATO missile defense announced by President Barack Obama in 2009— was adaptability. The EPAA system should now adapt to the reality that Iran’s nuclear program has been verifiably limited and the range of its missiles has not increased as expected.

EPAA’s first two phases are already in place. These are designed to cover Southern Europe against missiles from Iran. Given Iran’s existing arsenal of conventionally-armed short and medium-range missiles, these deployments are roughly in line with the stated policy—even though the system was built with nuclear-armed missiles in mind, and we now know that Iran does not have a nuclear weapon, nor will it be able to develop one on short notice...

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In Depth News (Rancho Santa Margarita, CA)

### 'U.S. Prepares To Confront Nuclear Ban Treaty With Smart Bombs

By Rick Wayman

May 24, 2017

On May 23, the U.S. Department of Energy (DOE) issued a press release celebrating President Trump's proposed 2018 budget. DOE specifically lauded the proposed "\$10.2 billion for Weapons Activities to maintain and enhance the safety, security, and effectiveness of our nuclear weapons enterprise."

Less than 24 hours earlier, Ambassador Elayne Whyte of Costa Rica released a draft of a treaty banning nuclear weapons. Ambassador Whyte is President of the United Nations Conference to negotiate a legally binding instrument to prohibit nuclear weapons, leading towards their total elimination. Over 130 nations have participated in the ban treaty negotiations thus far. A final treaty text is expected by early July.

The draft treaty would prohibit state parties from – among other things – developing, producing, manufacturing, possessing or stockpiling nuclear weapons. The United States has aggressively boycotted the treaty negotiations, and has actively sought to undermine the good faith efforts of the majority of the world's nations to prohibit these indiscriminate and catastrophically destructive weapons.

No one is surprised at President Trump's proposed funding for nuclear weapons activities; in fact, it is largely a continuation of the U.S. nuclear "modernization" program that began under President Obama. What is alarming, however, is the tacit admission by the Department of Energy that it is not simply maintaining current U.S. nuclear warheads until such time as they are eliminated. Rather, it is enhancing the "effectiveness" of nuclear weapons by incorporating new military capabilities into new weapons expected to be active through the final decades of the 21st century.

The draft ban treaty makes clear "that the catastrophic consequences of nuclear weapons transcend national borders, pose grave implications for human survival, the environment, socioeconomic development, the global economy, food security and for the health of future generations."

Whether or not the United States plans to join the majority of the world's nations in a treaty banning nuclear weapons, its policies and programs must reflect the indisputable evidence of the catastrophic consequences of nuclear weapons use. There is simply no excuse for investing in new

nuclear weapons instead of an all-out diplomatic push for true security in a world without nuclear weapons.

### **A Good Faith Obligation**

Article VI of the Treaty on the Nonproliferation of Nuclear Weapons (NPT) obligates all parties to negotiate in good faith for an end to the nuclear arms race at an early date. That treaty entered into force over 47 years ago.

The draft ban treaty repeats the unanimous 1996 declaration of the International Court of Justice (ICJ), which said, “There exists an obligation to pursue in good faith and bring to a conclusion negotiations leading to nuclear disarmament in all its aspects under strict and effective international control.”

Judge Christopher Weeramantry was Vice President of the ICJ when it issued its 1996 Advisory Opinion. In a paper that he wrote for the Nuclear Age Peace Foundation in 2013, he examined in detail the concept of good faith in the context of nuclear disarmament.

He wrote, “There is no half-way house in the duty of compliance with good faith in international law.” He continued, “Disrespect for and breach of good faith grows exponentially if, far from even partial compliance, there is total non-compliance with the obligations it imposes.”

The U.S. and numerous other nuclear-armed countries argue that they are in compliance with their obligations because the total number of nuclear weapons in their arsenals has decreased. Quantitative reductions are important, and the progress on this front has been significant over the past couple of decades. However, a nuclear arms race need not simply be quantitative. Rather, what we see now among many of the nuclear-armed nations is a qualitative nuclear arms race, with enhancements of weapons’ “effectiveness” being a key component.

This qualitative nuclear arms race is a blatant breach of the good faith obligation and, according to Judge Weeramantry’s interpretation, likely even constitutes bad faith.

### **A Ban Is Coming**

Regardless of how much money the United States and other nuclear-armed nations commit to their nuclear arsenals, the vast majority of the world’s nations plan to conclude a treaty banning nuclear weapons in July.

Even though such a treaty will not immediately halt nuclear weapons development or diminish the threat that current nuclear weapon arsenals pose to all humanity, it is an important step in the right direction.

The NPT and customary international law require all nations – not just those that possess nuclear weapons – to negotiate for nuclear disarmament. The ban treaty is the first of many steps needed to fulfill this obligation, and will lay a solid foundation for future multilateral action.

Non-nuclear-armed countries must continue to enhance the effectiveness of their diplomatic arsenals to ensure the successful entry into force of a ban treaty and subsequent measures to finally achieve a world free of nuclear weapons.

<http://www.indepthnews.net/index.php/armaments/nuclear-weapons/1163-u-s-prepares-to-confront-nuclear-ban-treaty-with-smart-bombs>

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Defense News (Tysons, VA)

## **Nuclear Weapons Agency Gets 11 Percent Funding Increase in FY18 Budget Request**

By Aaron Mehta

May 24, 2017

The government agency in charge of upkeep and modernization of America's nuclear warheads is in line for a big funding boost, thanks to U.S. President Donald Trump's fiscal 2018 budget request.

The National Nuclear Security Administration (NNSA), a quasi-independent entity within the Department of Energy, is marked for \$13.9 billion, an increase of \$1 billion — or 7.8 percent — above the FY17 Omnibus level.

The vast majority of that funding will be going towards NNSA's nuclear weapons programs, which was certainly welcomed by Frank Klotz, the retired U.S. Air Force general who now heads the nuclear agency.

NNSA is engaged in a quintet of major warhead programs, including the W76-1 Life Extension Program, which will extend the life on the U.S. Navy's Trident II D5 submarine-launched ballistic missile; the B61-12 Life Extension Program, which seeks to combine a number of B61 bomb variants into a more modernized nuclear gravity bomb; the W80-4 Life Extension Program, whose goal is to provide a warhead for a future long-range standoff missile that will replace the U.S. Air Force's current air-launched cruise missile; the IW-1 Life Extension Program, which is meant to create an interoperable warhead for various systems; and the W88 Alteration 370, which will replace the arming, fuzing and firing subsystem for the W88 warhead for the Trident II.

A recent report by the Government Accountability Office warned that NNSA has to understated how much money it will need to complete those warhead modernization programs, in some cases by billions of dollars. Klotz did not address that report directly, but noted that as the weapon programs move forward from early research into higher-level stages of development, they will naturally require more funding.

The budget growth is "a recognition of where we are in several of our major weapons programs," as well as the need to revitalize NNSA's infrastructure, Klotz said. The retired general has spent much of the last year campaigning for congressional aid to deal with what he says is \$3.7 billion in deferred maintenance costs.

Stephen Young, a nonproliferation expert with the Union of Concerned Scientists says to not get too excited about the budget increase for weapons programs.

"The cost increases in U.S. nuclear weapons programs are not a result of any desire by President Trump to enhance the U.S. nuclear arsenal," Young said. "They simply reflect costs increasing in the weapons programs beyond what the NNSA expected, a completely unsurprising development considering the history of major projects at the agency."

While the weapons programs are getting a boost, nonproliferation programs are not so lucky, which raised concerns within the nonproliferation community.

"The Trump administration's budget request continues a trend that began under President Obama, of cutting programs intended to halt the spread of nuclear weapons in order to fund programs to maintain and upgrade the U.S. nuclear arsenal," Young said.

One interesting program in the budget highlighted by Klotz is the fact NNSA is kicking in \$183 million to a partnership led by Office of Science's Advanced Scientific Computing Research to develop exscale computing power that will allow higher-level research capabilities.

## Pentagon nuclear programs

More broadly, nuclear weapons programs from the Pentagon remained on track in the FY18 request. That includes continued funding for the start of the Long Range Stand-Off weapon (LRSO), the new nuclear cruise missile in the early stages of design.

Congressional Democrats and members of the nonproliferation community have taken aim at the weapon as destabilizing, but there does not seem to be much interest from the Trump administration to rethink its requirement.

Also of note, Pentagon budget documents show that the F-35A is scheduled to become certified to carry nuclear weapons in fiscal year 2025. While the goal of carrying the B61-12 nuclear gravity bomb has long been planned, this is the firmest date for when that capability will be online.

Meanwhile, the B-21 Raider, the Air Force's new bomber, increases its publicly acknowledged funding from \$1.3 billion to \$2 billion, although the program remains largely shrouded in secrecy. Budget documents continue to show an operational date of "mid-2020s" for the stealth plane, which will be used for both nuclear and conventional missions.

A recent estimate from the Congressional Budget Office put the cost of modernizing the nuclear enterprise over the next decade at \$400 billion, with other estimates putting the overall nuclear modernization at over \$1 trillion when all is said and done.

One quirk in how NNSA's budget worked in recent years involved a Program Support account inside DoD, which would hold onto out-year funding that OMB would then reallocate to NNSA in one-year increments. However, starting this year, that fund disappears. Instead, NNSA will house all that funding internally in what Klotz called a "return to regular order."

That money was always part of NNSA's budgeting plan and so will not impact the agency's budget.

<http://www.defensenews.com/articles/nuclear-weapons-agency-gets-11-percent-funding-increase-in-fy18-budget-request>

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## The Independent (London, UK)

### **The Worst Effects of Our Nuclear Programme Are The Ones That Nobody Talks About**

By Beyza Unal

May 16, 2017

*Between 1946-1996, more than 2,000 nuclear weapons tests were conducted by the US, UK, Soviet Union, France and China. Most of these took place in locations selected on the basis of colonial history, and in lands belonging to indigenous peoples*

A quarter of a century after the end of the Cold War, interest in nuclear weapons has revived, not reduced. But still a taboo surrounds our nuclear legacy. For all the debate over the tensions between the United States and North Korea, a taboo still surrounds the lingering impacts of nuclear weapons testing and fears for their future use in conflict.

Our latest research looked not only at the implications of a potential future nuclear conflict, but also the humanitarian consequences of nuclear weapons testing for more than seven decades.

Between 1946-1996, more than 2,000 nuclear weapons tests were conducted by the US, UK, Soviet Union, France and China. Most of these took place in locations selected on the basis of colonial history, and in lands belonging to indigenous peoples. And the impacts were severe.

As well as devastating costs to their health and environment, many affected communities still live with the social, cultural and economic consequences of these tests. Subjected to forced displacement, they lost their land and connection to that land forever. Many were prevented from pursuing their traditional livelihoods. Not everyone was compensated, and those affected reported a lack of official accountability.

Nuclear tests have adversely impacted mental health, by fostering climate of fear over radiological exposure in test locations, and through the creation culture of social stigma and discrimination.

One of the less tangible legacies of nuclear tests has been a sense of humiliation and alienation from society. This was seen following the attacks on Hiroshima and Nagasaki, when hibakusha women - survivors of the atomic bomb in Hiroshima and Nagasaki - faced marriage discrimination, but it echoed at testing sites. As a UNIDIR study noted, women from the Marshall islands suffered “humiliating” examinations by US military medical and scientific personnel as a result of the American nuclear weapons testing programme until 1958.

Today, the potential use of nuclear weapons, deliberate or accidental, represents a great risk to humanity. Two decades on from its inception, the Comprehensive Test Ban Treaty (CTBT) - an agreement to ban all types of nuclear detonations, including atmospheric, underground, space and underwater tests - has still not entered into force. The international nuclear order is in peril: the US and Russia have increased investment in nuclear modernisation; North Korea has conducted five tests in the past decade and has the will to continue, regardless of sanctions or threats of action.

Nuclear testing is part of weapons research and development: several steps ahead of a test is the decision to be ready, in principle, to use a nuclear weapon. There is an important connection between the widely-supported comprehensive ban on nuclear testing, and attempts to ban nuclear weapons altogether. A ban on testing has been pursued largely due to unacceptable effects on human life and the environment; precisely the same concerns drive current efforts to prohibit nuclear weapons.

Last week, the British and Australian governments announced healthcare aid for the indigenous communities who were exposed to radiation as a result of British nuclear tests 50 years ago. In a personal interview with us last year, Sue-Coleman Haseldine, a first-generation nuclear test survivor in Australia, told us the only possible compensation to her community would be “a world free of nuclear weapons”.

It’s time to start talking about the long-lasting effects of nuclear weapons. After all, unless we do, the nuclear taboo will only exist until a devastating detonation occurs somewhere in the world.

<http://www.independent.co.uk/voices/nuclear-war-threat-weapons-us-north-korea-russia-nuclear-testing-worst-thing-a7739131.html>

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The Washington Examiner (Washington, DC)

## **Chinese Fighter Jets Buzz US 'Nuclear Sniffer' Plane Over East China Sea**

By Travis Tritten

May 19, 2017

Two Chinese fighter jets intercepted a U.S. surveillance plane in the East China Sea on Wednesday amid larger diplomatic efforts over North Korea, the Air Force said.

The service said the crew members of the WC-135 nuclear-sniffing aircraft determined the Chinese pilots of the Su-30 jets were being "unprofessional." The encounter was still under investigation.

"The issue is being addressed with China through appropriate diplomatic and military channels," Pacific Air Forces spokeswoman Lt. Col. Lori Hodge said in a released statement.

The WC-135 Constant Phoenix is capable of detecting nuclear weapons activity and was deployed last month to Kadena Air Base on Japan's far southern island of Okinawa as the North Koreans were ramping up missile testing.

Since then, the Trump administration has been looking to China to pressure the regime of Kim Jong Un to give up its ambitions for a nuclear-tipped intercontinental ballistic missile that could reach the U.S. mainland.

However, there is deep friction between China and the U.S. over that country's territorial claims in the East China Sea, which includes the Korean

<http://www.washingtonexaminer.com/chinese-fighter-jets-buzz-us-nuclear-sniffer-plane-over-east-china-sea/article/2623592>

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Defense Media Activity (Fort Meade, MD)

## **'Devil' Soldiers Train in Counter WMD in South Korea**

By Warren Wright

May 22, 2017

Soldiers from 1st Battalion, 16th Infantry Regiment, and 2nd Battalion, 34th Armor Regiment, 1st Armored Brigade Combat Team, 1st Infantry Division, participated in exercise Warrior Strike 7 at the Rodriguez Live Fire Complex in Pocheon, South Korea and Camp Stanley in Uijeongbu, South Korea May 1-5.

The combined exercise with the South Korean military had Soldiers conduct air assaults from multiple locations into the target areas before securing and searching for simulated weapons of mass destruction.

Warrior Strike 7 "strengthens our own ability to meet our responsibilities here on the peninsula in countering weapons of mass destruction," said Maj. Ronald Brown, the 1st ABCT aviation officer and lead Warrior Strike 7 planner. "Also, since it's a combined effort between us and the Korean forces, it strengthens our relationship with Korean military forces in a joint and combined fashion."

During the first portion of the exercise, approximately 90 Soldiers from 1st Bn., 16th Inf. Regmt. conducted their air assault from the Dokdo, a South Korean naval vessel. The ship was anchored

roughly 50 miles offshore when the Soldiers boarded their CH-47 Chinook and UH-60 Blackhawk helicopters bound for Camp Stanley.

“I, along with those 90 Soldiers, never imagined conducting an air assault from a navy vessel, especially one of the largest war ships in the (South Korean) navy,” said Maj. Michael Wellock, the operations officer for 1st Bn., 16th Inf. Regmt. “The Navy has a rich history and many traditions that our Soldiers are unaccustomed to. However, the (South Korean) navy and their sailors welcomed us with open arms and full transparency.”

Wellock went on to say that, while the Soldiers could have conducted their air assault from any location, doing it from the deck of a South Korean vessel showed that the battalion has additional operational reach and allowed commanders the additional options to employ their forces.

“The ‘Iron Rangers’ are prepared to move to an objective, link up and pass through the (South Korean) army, and clear any objective regardless of the delivery or movement method,” Wellock said. “Our ability to plan and coordinate with the 2nd Inf. Div., multiple battalions, enablers, aviators, the (South Korean) army and (South Korean) navy provides commanders at higher echelons a strategic employment capability.”

Once on the ground, the Soldiers joined with others from their battalion and met up with their South Korean counterparts before heading off to Camp Stanley’s tunnels. Also on hand were chemical specialists from the 2nd Infantry Division’s 23rd Chemical Battalion to help exploit the WMD site.

Once in the tunnels the 1st Bn., 16th Inf. Regmt. and 23rd Chem. Bn. Soldiers searched the tunnels for simulated munitions and WMDs.

“We conducted link up, passage of lines, integration of battle positions with the (South Korean) army, cleared and exploited an underground facility and submitted combined timely and accurate reports within eight hours of arriving at the landing zone,” Wellock said.

The next portion of the exercise had Soldiers from 2nd Bn., 34th Armor Regmt., board their helicopters at Camp Mobile in Dongducheon, South Korea, before flying to their training site on the Rodriguez Life Fire Complex.

Once on the ground, the ‘Dreadnaught’ Soldiers linked in with their South Korean counterparts that had already secured part of the mock village. Once link-up was complete, the Soldiers then cleared suspected WMD facilities, allowing for chemical enablers to exploit the sites.

The exercise culminated with a large-scale assault on Blackhawk Village on Rodriguez. The village contained numerous opposition force, or OPFOR, Soldiers that needed to be neutralized before searching for the village’s WMDs.

Warrior Strike 7 was the third such exercise the brigade participated in and was the last before departing home following their nine-month rotation to South Korea.

“I’m very pleased with the way the Soldiers performed,” Brown said. “From all the way from the planning phase, working in conjunction with division and our (South Korean) counterparts, to the way we performed on the ground was fantastic.”

Brown said organizers plan to pass along everything they’ve learned from the three exercises to future rotational forces, giving them the ability to build on what the 1st ABCT has already learned.

The Warrior Strike exercises are expected to grow and evolve as organizers build on the exercise as future rotational forces continue participating in the counter WMD event.

The 1st ABCT is currently in South Korea on a nine-month deployment as part of a regular rotational force to support the 2nd Inf. Div. and the U.S. commitment to security on the Korean peninsula.

<https://www.dvidshub.net/news/234813/devil-soldiers-train-counter-wmd-south-korea>

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Fast Company (New York, NY)

## **To Safely Dispose of Chemical Weapons, The U.S. Army Has Developed Some Next-Level Tools**

By Mark Wallace

May 24, 2017

*As the latest horrific attack in Syria heightened global awareness of this outlawed form of warfare, a new disposal plant is set to open in Colorado this summer.*

The chemical weapons attack in Syria this past April was a tragic reminder of why most of the world has renounced the use of such munitions. And it's sadder still that it came almost exactly 20 years after the enactment of the Chemical Weapons Convention, which calls for a halt to the production of chemical weapons and the destruction of any remaining stockpiles.

As lethal as any conventional attack, compounds like sarin and the nerve gas VX also cause an alarming amount of pain and suffering, and have been frowned upon by international governing bodies since at least the late 19th century. But getting rid of lethal chemicals encased in explosive shells is no simple task. For decades, the U.S. simply buried or burned its old or unwanted chemical munitions. But new environmental laws passed in the 1990s mandated that a more responsible approach be taken.

Now the U.S. Army, which is responsible for the task, is using two state-of-the-art pilot plants in Kentucky and Colorado to dispose of what remains of the more than 30,000 tons of chemical weapons the U.S. produced in the 20th century. And if all goes according to plan, the plants won't be needed once they finish the job.

The two plants are "unique, first-of-a-kind facilities," according to Joe Novad, acting head of the Army's Assembled Chemical Weapons Alternatives (ACWA) that runs the plants, and will utilize processes that are more environmentally friendly than previous technologies. About 90% of the U.S. stockpile has been disposed of since 1997, mostly through incineration, but some 2,600 tons of munitions and chemical agents remain at the Pueblo Chemical Depot in Colorado, and another 523 tons are at the Blue Grass Army Depot in Kentucky.

### **HOW TO DISASSEMBLE DEADLY SHELLS**

While the plant in Kentucky won't be operational until at least 2019, the Pueblo Chemical Agent-Destruction Pilot Plant, or PCAPP, as it's known, entered a testing phase last September, and will ramp up to capacity sometime this summer. It has already begun processing rounds of mustard gas contained in 155- and 105-millimeter projectiles and 4.2-inch mortar shells, and will slowly ramp up to capacity over the coming months. To get at the deadly materials within, each shell must be carefully disassembled, and in many cases explosive "bursting" designed to assist in the spread of lethal chemicals must be removed before the "agent cavity" can be accessed.

Fortunately, no one need come in harm's way to do this work. "Once you start the process, there is no human interaction," says Novad. Instead, robots are used to "pick and place" the munitions to the

various stations throughout the plant. Repurposed from the automobile industry, PCAPP's robots are monitored by human staff but operate autonomously, having first gone through a learning process to handle the shells that must either be disassembled or "punched and drained" before the chemical agent can be neutralized separately.

That neutralization process involves mixing the mustard agent with a caustic solution to produce a hydrolysate containing mostly water and a common industrial chemical known as thiodiglycol. This is then biodegraded by combining it with a bacteria-rich sludge from wastewater treatment plant sewage. The water goes through a brine-reduction process before being recycled back into the plant, and the salts and other "organics" that are left over go into a hazardous waste landfill. In the case of nerve agent, a process called "supercritical water oxidization" is used to heat the materials above 700 degrees Fahrenheit at more than 200 atmospheres of pressure, in order to quickly "mineralize" the toxic materials.

The empty shells themselves are also recycled to capture the carbon steel they contain. "Once they're drained and rinsed, they go through a heat-treatment process to ensure that all the agent has been destroyed, and then we send them off to local smelting facilities to reclaim that steel," Novad says.

### **RECYCLING TOXIC SOIL**

But that's the easy part. The U.S. produced chemical weapons for more than 70 years, ceasing in 1989. Many of the remaining munitions have been damaged in storage or contain chemical agents that have solidified over time and cannot be processed in the main plants.

For these, the Army has developed solutions that are literally more explosive. To get at the deadly poisons in the cases, the Army seals the damaged munitions in the heavy steel containment vessel of what it calls the Explosive Destruction System (EDS). Long, narrow explosive charges are then used to break open the shells, and a neutralizing solution is added to the vessel, which is heated and agitated, not unlike a washing machine.

The EDS is effective (and transportable) but slow: The Army's latest model can handle six charges in a day. Though there are a staggering 780,000 rounds of chemical weapons stored at Pueblo, the good news is that Novad estimates only some 1,100 or so will be too tricky for the plant's robots to handle. In Kentucky, a similar but larger system known as the Static Detonation Chamber will handle some 15,000 rounds of mustard gas munitions stored there.

The process seems slow, but it is the product of years of work on a difficult problem. The Army first started investigating alternatives to incineration in the late 1990s, and the Pueblo pilot plant broke ground on its construction in 2004. The \$10.6 billion program has a limited lifetime: When the remaining munitions and bulk chemicals stored in Colorado and Kentucky have been disposed of, the plants will be dismantled and the sites remediated, probably sometime in the mid-2020s.

Though the world has agreed to get rid of its chemical weapons, incidents like the Syrian attack indicate the road to chemical disarmament may be longer than one would hope. The U.S. Department of Defense (DoD) certainly hasn't stopped looking for solutions: A new technology being developed by DARPA, the DoD's secretive R&D arm, uses waterless soil-scrubbing technology in conjunction with a high-temperature plasma torch to neutralize chemical agents without producing any toxic waste. The soil used in the process can be safely returned to the environment, according to DARPA.

But that system has yet to be tested on actual chemical munitions. And while DARPA's system and those in use by the Army may represent significant advances in technology, the hope is that once they accomplish their current missions, they will never need to be used again.

<https://www.fastcompany.com/40423648/to-safely-dispose-of-chemical-weapons-the-u-s-army-has-developed-some-new-tools>

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DefenseNews (Tysons, VA)

## **Ahead Of Ballistic Missile Defense Review, MDA's FY18 Plans Show Flexibility**

By Jen Judson

May 23, 2017

The Ballistic Missile Defense Review ordered this month by Defense Secretary James Mattis won't wrap up until the end of the year but the Missile Defense Agency's fiscal year 2018 budget request shows signs of flexibility ahead of the reviews findings.

MDA is requesting \$7.9 billion in FY18, an increase of \$379 million from the FY17 request, according to budget documents released Tuesday.

Big and small changes could be afoot as President Donald Trump considers how to shape both regional and homeland defense in his administration.

The Obama administration can take credit for the European Phased Adaptive Approach which sets up a series of radars in Europe to protect U.S. forces deployed abroad and its allies against possible ballistic missile threats from Iran. And the Ground-based Mid-course Defense System that protects the homeland from possible threats from Iran and North Korea was initially fielded during the George W. Bush administration.

While it remains to be seen what the Trump missile defense legacy will be, MDA is looking at a few capabilities that might be considered in the review while proceeding forward with major current and future missile defense programs in the works.

Nothing in the FY18 budget would "preclude moving forward" when a review comes out, Gary Pennett, MDA's director for agency operations, said during a Pentagon budget briefing Tuesday. "We try not to preclude anything in advance of that and we did that with the thought in mind that the BMDR would potentially inform us as we go forward and so we are prepared for that."

For example, MDA plans to fund a \$5 million study to look the possibility of establishing an Atlantic radar. The study would assess "the feasibility of appropriate tracking and discrimination sensor capabilities to support the defense of the United States against emerging, long-range, ballistic missile threats from Iran," Pennett said.

The results of the study will inform the BMDR, he added.

MDA is also preparing to ramp up radar coverage in the Pacific Ocean, according to Pennett.

A sensors analysis of alternatives conducted by the Defense Department identified a next near-term critical step to optimizing tracking and discrimination capabilities in the Pacific is to deploy a radar there, Pennett noted.

MDA is requesting \$21 million for an Enhanced Homeland Defense Radar in Hawaii, Pennett said, and will conduct source selection activities in 2018 with a plan to deliver initial capability for the radar by 2023. The agency plans to award a radar contract in FY18.

Pennett added the current defense radar is effective and a new radar anticipates future threats from Iran and North Korea.

Much of the budget continues on the same path for both homeland and regional defense.

### **Homeland defense**

The agency is requesting \$828.1 million for the GMD system in place at Vandenberg Air Force Base, California, and Fort Greely, Alaska.

Currently, Pennett said, there are 36 ground-based interceptors in place and MDA is on track for installing 44 GBIs to complete the full complement of GMD interceptors by the end of the year.

MDA is also asking for \$465.5 million for Improved Homeland Defense Interceptors as part of the GMD Redesigned Kill Vehicle that “will address an evolving threat, enhance kill vehicle reliability,” which has struggled in tests over the years, “and improve in-flight communications to better utilize off-board sensor data,” the budget documents read.

In FY18, MDA plans to conduct its first GMD operational flight test, FTG-11, which is a salvo intercept using GBIs launched from Vandenberg against Intercontinental Ballistic Missile threats from the Reagan Test Site.

MDA is also asking for \$130.7 million to extend the amount of time its Sea-Based X-Band radar is on station from 120 days at sea to 330 days at the request of U.S. Pacific Command and U.S. Northern Command.

The agency is also continuing a study on a possible East Coast site for an SBX radar. The study is due to be completed by the end of 2018.

The budget request contains \$357 million for the Long Range Discrimination Radar, a mid-course sensor that will bolster BMD target discrimination. MDA will complete the design and buy radar antenna components and will conduct qualification and sub-system testing in 2018, Pennett said.

### **Regional defense**

As part of the EPAA, MDA supports the operation of an AN/TPY-2 radar in Turkey, an Aegis Ashore missile defense system in Romania and is preparing for a second Aegis Ashore site to become operation by the end of calendar year 2018.

The agency is requesting \$59.7 million in FY18 for the Aegis site in Poland.

Additionally, MDA is asking for \$852.1 million for Aegis BMD activities including the integration of the SM-3 Block IIA into BMD weapon systems. The agency is requesting \$624.1 million in Aegis BMD procurement — \$425 million to procure 34 Aegis SM-3 Block IB missiles in FY18 along with 287 SM-3 Block IB missiles with 182 delivered to the fleet by the end of FY18.

Further development of the Terminal High Altitude Area Defense System (THAAD) would require \$230.2 million to include integration of THAAD into the Army’s Integrated Air and Missile Defense System Battle Command System.

Another \$36.2 million is needed for THAAD testing and \$451.6 million to procure THAAD equipment including 34 THAAD interceptors in 2018. By the end of FY18, the agency will deliver 52 additional interceptors to the Army. MDA is requesting \$78.8 million for operations and maintenance for THAAD batteries.

THAAD is currently deployed in Guam and South Korea. MDA will support seven THAAD batteries total in FY18.

### **Technology development**

MDA has plans to invest in high power lasers, a Multi-Object Kill Vehicle and other breakthrough technology, according to Pennett. Better discrimination and tracking capabilities and improving the shot doctrine are among goals for science and technology efforts.

The agency wants \$128.4 million that would partly fund integrating an advanced sensor onto a Multispectral Targeting System and the MQ-9 Reaper “to address precision track and discrimination performance of this technology with the goal of eventually migrating to a space sensor layer,” according to budget documents.

MDA will also continue work on an unmanned aerial vehicle-borne laser for boost phase missile defense.

The agency is requesting \$252.9 million for the Common Kill Vehicle Technology program “for killing multiple lethal objects from a single interceptor,” the documents notes. The agency has awarded contracts to three prime developers to reduce technical risk over three years.

The request also includes \$17 million for a Space-based Kill Assessment experiment. “The full SKA network is currently planned to be on orbit in FY17,” the documents state.

Mandated by Congress, MDA will continue to work on hypersonic defense systems in FY18 to include a “defense against hypersonic threats analysis of alternatives, capability roadmap development and initial investment in sensor technology demonstrations and weapon concepts to address the advanced threat,” according to budget documents.

MDA also plans to use existing sensors and ground-based command and control “to quickly demonstrate and deploy a three-phase contingency capability to provide real-time warning over the majority of the hypersonic threat profile by 2019,” the documents read.

The agency is requesting \$75.3 million on hypersonic defense activities.

<http://www.defensenews.com/articles/ahead-of-ballistic-missile-defense-review-mdas-fy18-plans-show-flexibility>

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The Drive (US)

### **The U.S. Army Wants to Expand a Secretive Missile Defense Site in Turkey**

By Joseph Trevithick

May 25, 2017

*The service's 2018 budget proposal calls for significant improvements to the remote "Site K"*

The U.S. Army is looking to expand a secretive missile defense site in Turkey, according to the service's request for funds in the 2018 fiscal year. The plan comes amid tensions between officials in Washington and Ankara over support for Kurdish rebels fighting ISIS in Syria, as well as cool relations with Russia who have historically criticized America's missile protection plans in Europe and the Middle East.

Posted online on May 23, 2017, the military construction portion of the Army's budget proposal includes approximately \$6.4 million to build out a so-called “forward operating site” at an

unspecified location in Turkey. The plan would provide adequate space for approximately 250 American personnel, Turkish forces, and contractors, operating a mobile AN/TPY-2 radar on behalf of the Missile Defense Agency (MDA), as well as improve the overall quality of life at the facilities. Separately, the MDA asked for \$524 million to support its entire world-wide "radar fleet," including the TPY-2 in Turkey.

"This project is required ... for a unit undergoing conversion from a Detachment to a Ballistic Missile Defense Battery," according to the project description. "The project supports the operations of the AN/TPY-2 radar system, a deployed component of the Missile Defense Agency."

Though the Army doesn't say where the small base actually is, other publicly available documents point to an obscure facility near Malatya, Turkey, known as "Site K." The Army, in cooperation with the MDA, first began setting up there in 2013 as part of a NATO missile defense mission known as Operation Atlantic Sentry. Raytheon's radar is most commonly associated with Lockheed Martin's Terminal High Altitude Air Defense (THAAD) anti-missile system, but it can operate as an independent surveillance tool.

**From the request, the existing facilities sound pretty austere and unwelcoming. This is the official overview of the situation:**

"The location is a previously abandoned radar site on a remote, underdeveloped mountain top. Currently, deteriorating temporary rigid wall structures are being used for the unit's readiness building. The unit is without warm vehicle storage. The vehicles are exposed to harsh winter conditions, sub-zero temperatures, heavy snowfall and high winds, which persist seven months of the year. Food is stored in refrigerator vans which are nearing the end of their service life. Large quantities of supplies must be temporarily stored in distant locations because the site is inaccessible during the winter months."

So, the Army wants new funds specifically to pay for an upgraded ready building for the missile defenders, an expanded motor pool, an improved power plant, and various storage facilities to support these operations. In addition, the money covers associated improvements to the site's local defensive perimeter, electric power and gas lines, water and sewage systems, and storm drains.

Maintaining the site is an important part of MDA's global posture, which is primarily focused on protecting against potential missile launches from smaller, regional actors such as Iran and North Korea. Site K is one of three known AN/TPY-2 radar positions in the Middle East and Northeast Asia. The other two are in Japan and at a location on top of Israel's Har Keren known as Site 512. As of May 2017, there was another radar deployed somewhere else in the Middle East. Another unit was assigned to a Army THAAD task force on the island of Guam.

Though the exact range of the system isn't known, Raytheon's radar may have the ability to track targets more than 1,800 miles away, depending on its position. These positions give MDA the ability to spot missile launches and other activity inside Iran and North Korea. The Pentagon recently set up another one of the radars in South Korea.

MDA and U.S. Strategic Command, which supports these sites through its Joint Functional Component Command for Integrated Missile Defense (JFCC-IMD), are especially tight-lipped about this network. In December 2014, in response to the author's Freedom of Information Act request seeking a complete roster of overseas missile defense sites, STRATCOM said it could "neither confirm nor deny the existence or nonexistence of any remaining sites" beyond Sites G, K, and 512.

The command did confirm that MDA was no longer overseeing Site G, a "contingency location" situated near Gaziantep in Turkey. At that time, Army air defense soldiers were operating Patriot missile batteries from that site to guard Turkey against potential Syrian ballistic missile attacks as

part of a mission nicknamed Operation Anatolian Protector. This followed reports in December 2012 that the regime in Damascus was firing Scud missiles at rebel positions inside the country.

Unfortunately, the Army's plans to continue support for and expand Site K come at a time when relations between Turkey and the United States, both NATO allies, are unusually cold. Ties between the two countries have been increasingly strained over American assistance to Kurdish forces in neighboring Syria. The War Zone has already written extensively on this issue. Officials in Washington see the Syrian Kurds as invaluable partners in the fight against ISIS, while Turkish authorities see them as an extension of domestic terrorists.

Both sides might decide to use the facility as a political bargaining chip. It reportedly took more than a year to negotiate the deployment of American personnel to Site K in the first place. Then, in 2015, Turkey publicly criticized the Pentagon's decision to withdraw the Patriots from Site G. The Army's troops never fired a shot in anger against an incoming Syrian missile during the multi-year deployment. Spanish air defense units ultimately took over the mission.

However, the United States is unlikely to be interested in giving up the capability at Site K. During visits to Saudi Arabia and Israel in May 2017, President Donald Trump and other members of his administration repeatedly criticized Iran. Earlier in the month, the U.S. government expanded sanctions on the regime in Tehran over its missile programs, which American officials say could eventually produce an intercontinental ballistic missile capable of carrying a nuclear weapon.

Syria's Scuds remain a threat, too. In March 2017, the government in Damascus threatened to unleash a barrage of the missiles at Israel if it did not halt air strikes on Syrian territory targeting arms shipments reportedly bound for Hezbollah terrorists. To the best of our knowledge, without the radar in Turkey, Site 512 in Israel would be alone in watching both Iran and Syria from the ground.

And with the relationship between the governments in Moscow and Ankara thawing over increasingly shared interests in Syria, Russia could also seek to pressure Turkey over the site. The Kremlin has repeatedly criticized American and NATO missile defenses as a threat to its nuclear deterrent. While there are no anti-ballistic missile weapons based at Site K, the powerful AN/TPY-2 is problem enough for officials in Moscow. Though ostensibly pointed at Iran, it could also let American forces keep an eye on Russia's southern flank. Chinese officials have similarly complained about the new radar site in South Korea.

An enlarged, more permanent base at Site K would open up the possibility to deploy actual THAAD interceptors. One wonders why else it would otherwise be necessary to not only improve the facilities on the mountain top, but also expand them to accommodate an entire battery's worth of personnel.

At the moment, the actual climate appears to be more pressing than the political climate. Whatever happens to the facility in the end, hopefully the personnel near Malatya will at least keep warm in the meantime.

<http://www.thedrive.com/the-war-zone/10638/the-u-s-army-wants-to-expand-a-secretive-missile-defense-site-in-turkey>

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The New York Times (New York, NY)

## **U.N. Panel Releases Draft of Treaty to Ban Nuclear Arms**

By Rick Gladstone

May 22, 2017

A United Nations disarmament panel presented the first draft on Monday of a proposed global treaty to ban nuclear weapons, which advocates called an important step that could hasten completion of a final text by early July.

Nuclear powers including the United States have boycotted the negotiations for such a treaty, calling its goals naïve and unattainable — especially at a time when North Korea has threatened to launch nuclear-armed missiles at its enemies.

But those nations' longstanding argument for deterrence — that the best way to keep nuclear arms from being used is to hold the ability to retaliate in kind — has failed to halt the momentum in the negotiations. The first round was held in March, and the effort is supported by more than 120 countries.

Treaty supporters have argued that if enough countries ratified an international agreement outlawing nuclear weapons, the political and moral coercive pressure would eventually persuade holdouts to reconsider.

Similar strategies were pursued in negotiations that led to global treaties banning other indiscriminate weapons, including chemical arms, cluster bombs and land mines. As more countries have joined those treaties, the shaming effect has grown on those that decline.

The nuclear draft text would commit treaty signers to “never use nuclear weapons” and never “develop, produce, manufacture, otherwise acquire, possess or stockpile nuclear weapons or other nuclear explosive devices.”

Signers would also promise to never “carry out any nuclear weapon test explosion or any other nuclear explosion.”

Less clear from the draft text is precisely how nuclear-armed countries that renounce those weapons could join the treaty, and under what conditions.

But language in the draft specifies that the treaty is intended to strengthen — and not replace — the existing treaties meant to stop the spread and testing of nuclear weapons.

The draft's preamble specifies that the Treaty on the Non-Proliferation of Nuclear Weapons, the landmark agreement that entered into force in 1970, would remain “an essential foundation for the pursuit of nuclear disarmament.”

The draft is now subject to revision at a three-week round of negotiations at the United Nations scheduled for mid-June.

Supporters of the negotiations said the draft's existence by itself was significant.

“The draft language is strong and categorically prohibits nuclear weapons,” Beatrice Fihn, executive director of the International Campaign to Abolish Nuclear Weapons, said in a statement.

The disarmament group called the draft “an essential milestone in the yearslong effort to ban these indiscriminate weapons of mass destruction and an important step toward their eventual elimination.”

Elayne G. Whyte Gómez, Costa Rica's ambassador to the United Nations in Geneva and chairwoman of the conference that is overseeing the negotiations, said in a telephone interview that she expected revisions to the draft.

Ms. Gómez, who was responsible for writing the draft, said she had sought to "synthesize the many areas where the views of states converged."

There was no comment from the United States ambassador to the United Nations, Nikki R. Haley, who led a group of envoys from member states who had publicly rejected the negotiations when they began two months ago.

Aides to Ms. Haley said that she was traveling but that the American position had not changed.

Daryl G. Kimball, executive director of the Arms Control Association, a disarmament research and advocacy group in Washington, said he regarded the minimum number of ratifications to put the treaty into effect — 40 — to be relatively low, possibly limiting its coercive impact. Mr. Kimball also noted that the text of the treaty draft did not explicitly prohibit the financing of nuclear weapons or the issuing of nuclear threats. Nonetheless, he said he supported the negotiations and objective.

"The vast majority of world states say nuclear weapons are not essential for security, and that we want to reduce their salience by banning them," he said. "That is a contribution to the goal of a world without nuclear weapons."

Besides the five permanent members of the United Nations Security Council — the United States, Britain, China, France and Russia — four countries are known to possess nuclear weapons: India, Pakistan, North Korea and Israel. None support the negotiations.

<https://www.nytimes.com/2017/05/22/world/americas/united-nations-nuclear-weapons.html>

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Jalopnik (New York, NY)

## **How To Dismantle A Nuclear Weapon**

By Terell Starr

May 22, 2017

Dismantling the world's 15,000 nuclear weapons is one of the most important geopolitical challenges humanity faces. That number seems bleak, given the current state of affairs. But if you wanted to dismantle just one warhead, here is what it would take.

Those warheads make the world a dangerous place, but we have to keep in mind there were more than 70,000 nuclear warheads in existence at one point. Though Cold War-era non-proliferation treaties were central to the massive cuts, most nuclear warheads were retired or dismantled during the 1990s after the dissolution of the Soviet Union. President George H.W. Bush cut 9,500 during his term as president; in 1992 alone, he cut 5,300 warheads, which was the most by any president ever in history. During the 2000s, his son cut the stockpile by more than half to 5,270 warheads. Together, the son and dad president team cut 14,801 warheads from the stockpile.

Comparatively, President Barack Obama cut a mere 507 warheads, but relations between Russia and the U.S. were quite chilly during his term and both nations increasingly saw each other as military threats.

But the U.S. and Russia have their own arms issues. The New START treaty between the United States and Russia is the most important non-proliferation treaty in the world right now, yet its

extension appears to be in limbo. India and Pakistan, though they only have 250 warheads between them, could ruin the earth's atmosphere if they ever engaged in a regional nuclear conflict.

Politics aside, however, once a nation agrees to cut its nuclear stockpile, how does it happen, where and when? We spoke with a few nuclear weapons experts who walked us through the process of how this actually happens, with the focus on how the Americans do it.

### **The Question Of Dismantlement Versus Retirement**

Once a president decides to cut down the nuclear arsenal, he or she must decide if they want to retire or dismantle the warheads. It is important to know the difference. Tom Collina, Director of Policy at Ploughshares Fund—an anti-nuclear weapon philanthropic group—says that current treaties do not focus on the actual dismantlement of weapons.

“They only require that weapons be retired or removed from service,” he said. “They do not require that weapons be dismantled. So, you can have the New START treaty lowering the number of deployed systems you can have, but that doesn't mean those weapons get dismantled. It just means they get put into storage.”

There is no verification process for determining if a nuclear warhead is destroyed or not once they get to storage, because they are simply are too small to see from space, Collina explains.

Missiles are different.

Those, along with bombers and submarines, are under treaty, and their dismantlement can be verified via satellite, simply because they're so big. You can see a missile being chopped in half or a bomber's wings clipped from space.

But a nuclear warhead itself, which is much smaller? That is simply not possible.

Right now, there are around 2,800 warheads in retirement in the U.S., meaning they are no longer stockpiled. As the State Department explains, once a retired warhead is removed from its delivery platform, it is no longer useable and is not considered part of the nuclear stockpile. The tritium bottles are also removed. Tritium is a radioactive form of hydrogen that is critical to powering a bomb. Other “limited life components,” like the neutron generators, are also removed.

The warhead is stored in a depot where they hopefully will move on to the next process of being destroyed.

### **Separating A Warhead**

The key components of a nuclear weapon, besides the metals used to construct its exterior, are uranium, plutonium, tritium boost gas, the neutron generator and other elements, according to the Union of Concerned Scientists. And separating a warhead is the hardest and most dangerous part of dismantlement.

The National Nuclear Security Administration is the governmental body that oversees the dismantlement process, which takes place at the Pantex Plant, in the Panhandle of Texas. Pantex is the primary plant where nuclear weapons assembly and disassembly occurs. The warhead is taken to an underground bunker, where its parts are separated.

Phillip Coyle, the Senior Science Fellow at the Center for Arms Control and Non-Proliferation, told me some of the valuable metals, such as the copper and gold, are recycled.

The toughest issue comes with the high explosive components, which are burned and the resulting ashes are shipped to an EPA-approved disposal site. Uranium-bearing components are separated and shipped to the Y-12 site at Oak Ridge, Tennessee. (We will get into what it takes to safely get rid of uranium later)

## How Long Does The Dismantlement Process Take?

It depends.

Last year, the New York Times reported that the Obama Administration dismantled the fewest number of warheads since entering office in 2008. Obama, who was very vocal about cutting the number of nuclear weapons in the world, was criticized for his words not matching his actions; in 2015, only 109 weapons were dismantled.

But you can't blame Obama entirely. In that same Times report, Hans M. Kristensen, director of the Nuclear Information Project at the Federation of American Scientists, is cited as saying that Obama had to contend with a Congress that clashed with his non-proliferation vision and negotiate with a difficult Kremlin:

"His vision of significant reductions and putting an end to Cold War thinking has been undercut by opposition ranging from Congress to the Kremlin," Mr. Kristensen wrote. "An entrenched and almost ideologically-opposed Congress has fought his arms reduction vision every step of the way."

Moscow, he added, has rejected cuts beyond modest ones it agreed to in the New Start treaty, which was signed in 2010 and observed beginning in 2011.

But once we get past the politics and everyone wants to destroy some nukes, how long does the technical process take? That, too, depends on a lot of things.

Let's begin with workload. Coyle said a wide range of factors can determine how long it takes to dismantle one warhead, such as allocated funds, and the time it takes to do safety inspections. Even the number of lightning strikes in the area are considered. All of these issues determine how many warheads are destroyed at a given time.

"It has been more typical for 300 or so dismantlements to be completed each year," Coyle said. "If, say, Pantex completed 365 dismantlements in a year, the average time for each dismantlement would be one day. If, say, Pantex completed about 120 dismantlements in a year that would be an average of about three days per dismantlement."

FYI: the highest number of dismantlements between 1994 and 2015 took place during the 1990s, when Clinton was president. In 1995, 1,393 weapons were dismantled. On average, 1000 weapons were dismantled per year during the 1990s. Since 1999, that yearly average dropped to 300.

## The Difference Between Uranium And Plutonium

Both uranium and plutonium can be used to make weapons, but one of the main differences is that you need a much smaller amount of latter, which is why some nuclear states prefer it.

Bomb-ready uranium is relatively easy to extract. The easiest way to make a uranium bomb is with U-235, which is a rare naturally occurring isotope of uranium. It's usually mixed in trace amounts with the more common isotope of uranium, U-238. To extract what little U-235 there is, uranium needs to be "enriched," most commonly by spinning it in massive centrifuge assemblies that are capable of separating the uranium by weight.

Enriching U-235 to 90 percent or more makes it ready for weapons use.

Plutonium, on the other hand, is manmade and doesn't naturally occur like uranium. Plutonium-239 is the isotope most commonly used in plutonium-based nuclear warheads.

"When you take a fuel rod that has uranium in it and put it in a reactor, some of the uranium burns," David Wright, a nuclear weapons expert at the Union of Concerned Scientists said. "You put the uranium fuel rod [in the reactor], let the reactor operate for a few years. You pull it out, that fuel rod

has plutonium in it. The way people get it is that they chemically break down the fuel rod and extract the plutonium.”

The downside is plutonium can't be used for much else besides nuclear weapons.

### **What To Do With The Uranium**

When compared to the process of getting rid of plutonium, it is relatively easy to break down uranium for peaceful use. Uranium is used in civilian nuclear power plants, but the kind that is used for nuclear weapons is highly enriched. You basically have to mix it with a lower grade of uranium (more specifically, reactor grade uranium, which is only three to five percent U-235, as opposed to the 90 percent in bombs) to make it ready for civilian use.

Here's a fun fact: Most Americans have no idea that nearly half of the uranium burned at U.S. power plants between 1994 and 2014 came from decommissioned Russian weapons, according to the Bulletin of Atomic Scientists. It started back in 1993 under the “Megatons to Megawatts” program, when the Russians agreed to convert 500 tons of bomb-grade uranium into nuclear power and sell it to the Americans; in turn the Americans sold to to energy companies stateside. It was a good way for Washington to find common ground with its former adversaries after the fall of the USSR.

Plus, it was profitable for them because the Russian economy was on the brink of collapse at several points during the 1990s. Moscow made \$17 billion during the program's 20-year span. But the Kremlin ended it in 2013, as it didn't feel Russia could benefit from it any longer. Specifically, Pavel Podvig, a Russian physicist, wrote in 2008 that the program is not economically advantageous for Russia, nor does it adequately address its own non-proliferation needs.

That said, weapons-grade uranium can be used for civilian use. Plutonium, though, is another story altogether.

### **Getting Rid Of Plutonium Is Harder**

For one, there is no civilian use for plutonium in the United States because you can't break it down or blend it. In other words, it is always ready to be used for weapons. In fact, according to Live Science, of its five common isotopes, only plutonium-238 and plutonium-239 are used for anything.

Pu-238 is used for powering space probes and Pu-239, the isotope we're talking about, goes through a fission chain reaction when concentrated enough. And when that process takes place, it is nuke-ready.

By the way, Plutonium is pretty damn radioactive and contains the “worst kind of fission byproducts that could enter the environment as a result of the Fukushima nuclear disaster,” as Live Science notes (emphasis ours):

According to the Environmental Protection Agency, plutonium enters the bloodstream via the lungs, then moves throughout the body and into the bones, liver, and other organs. It generally stays in those places for decades, subjecting surrounding organs and tissues to a continual bombardment of alpha radiation and greatly increasing the risk of cancer, especially lung cancer, liver cancer and bone sarcoma.

There are documented cases of workers at nuclear weapons facilities dying within days of experiencing brief accidental exposure to plutonium, according to the Hazardous Substances Data Bank.

Furthermore, among all the bad things coming out of Fukushima, plutonium will stay in the environment the longest. One isotope of plutonium, Pu-239, has a half-life of 24,100 years; that's the time it will take for half of the stuff to radioactively decay. Radioactive contaminants are

dangerous for 10 to 20 times the length of their half-lives, meaning that dangerous plutonium released to the environment today will stick around for the next half a million years.

That is why Japan's reported goal to use plutonium for civilian reactors have the U.S. and China worried. At one point, Japan had around 10 tons of unseparated plutonium in-country; 37.1 tons are in France and the United Kingdom. China fears Toyko could possibly use the plutonium to develop nuclear weapons, although the Japanese did give up 730 pounds of it in 2016.

Collina said it's a good thing the U.S. has no plans to use plutonium for civilian purposes.

"You can't blend down plutonium," he says. "It's always weapons-usable. So if you use this stuff at nuclear power plants, you're basically spreading weapons-usable nuclear material all around. It's a proliferation problem because we don't want to set the example for other nations to say, 'I'm going to use plutonium in my civilian power program' and therefore create a cover for a secret weapons program. We want to have a pretty clear line that says, 'Plutonium is only used for weapons and you should not use plutonium if you're not using it for weapons.'"

As for actually getting rid of plutonium, the process is not environmentally friendly and it never will be. Most of the plutonium that is separated from nukes is stored at the Savannah River Site (SRS), near the Georgia border. Plutonium is also stored at the Pantex Plant. It's authorized to store 20,000 plutonium pits; current estimates find that 14,000 are stored in the facility.

But here's the catch: you can never make it truly safe, and no one wants it near them. For example, the Department of Energy, through the Nuclear Regulatory Commission, is currently overseeing construction of a facility at SRS to make MOX fuel from weapons-ready plutonium. It would then be used for commercial use.

The problem is that no one wants plutonium storage facilities in their backyards. The American ambassador to the United Nations, Nikki Haley, expressed concerns over the MOX fuel initiative when she was governor of South Carolina. Her issue was that the feds were supposed to remove a ton of plutonium from the state by January 2016 and ship it to another facility in New Mexico or process it for commercial use through the facility; neither happened, so she sued the Department of Energy. A federal circuit court dismissed the case.

Officially, MOX fuel is not being used in the United States, according to the Nuclear Regulatory Commission. Europe uses MOX fuel, but its plutonium is from spent nuclear fuel rather than nuclear weapons.

Former Nevada Senator Harry Reid resisted the Yucca Mountain Nuclear Waste Repository project, which was supposed to be a deep geological repository storage facility for spent nuclear fuel and radioactive waste like Pu-239. Under the Nuclear Waste Policy Act amendments of 1987, the Yucca Mountains were supposed to be the key destination for storing this waste, but Reid worked with Obama to end funding for the project.

### **Where To Send It?**

So, if no one wants plutonium in their backyard here on planet earth, where can it be disposed? Well, there have been a bunch of wild ideas, like blasting it into the sun. Which, as the video below explains, is a pretty bad idea.

You also have to factor in the possibility the space ship won't make it to orbit. "Space shuttles crash," Collina said. "So if you had just one crash with a space shuttle full of plutonium, that would ruin your whole day."

The best plan of action the feds have to deal with weapons-ready plutonium is to simply store it someplace—a place where folks won't complain to much about it. Good luck finding such a place.

## How Much Does It Cost To Build A Warhead Versus Dismantling It?

This is not an easy question to answer, because the government doesn't make it easy for us to know. But the costs associated with a nuclear weapon deal mainly with the warhead and the delivery system. According to the Union of Concerned Scientists, the United States hasn't built warheads since the 1990s, but it is refurbishing several types to extend their shelf life.

The cost for the Department of Energy to extend the life of 2,000 submarine-based W76 warheads cost of roughly \$2 million each. The B61 bomb will be more costly, it will require more modifications. For 400 or 500 B61 bombs, costs total around \$10 billion or \$20 million each.

"Compared with the cost of designing, manufacturing, and deploying nuclear weapons, and the cost of nuclear weapon delivery systems, the process for dismantling nuclear warheads is not particularly expensive," Coyle said. "Whether a dismantlement takes on average one day or three days, that is a very small part of the time and cost of building and deploying nuclear weapons in the first place."

Dismantling of all of the world's nuclear weapons is indeed a goal most sober-minded policy makers and non-proliferation advocates strive for. But doing so requires navigating complex global politics, galvanizing legislative will, easing local community concerns and mastering the science of getting rid of the nuclear waste separated from the warhead.

Of course, there is a great way to avoid all of these issues in the future altogether.

"Better that the material not be produced in the first place," Collina said. "But it's too late for that."

<http://foxtrotalpha.jalopnik.com/how-to-dismantle-a-nuclear-weapon-1795347850>

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## Arms Control Wonk (Washington, DC)

### **Daniel Salisbury: A Malaysian Shipyard With North Korean Connections?**

By Joshua Pollack

May 18, 2017

The assassination in February of Kim Jong Un's half-brother Kim Jong Nam at Kuala Lumpur airport has turned international attention to North Korea's other shady activities in Malaysia. A Reuters investigation has already revealed that a North Korean company has been marketing military radios from offices in Kuala Lumpur. It turns out that military radios may be the tip of the iceberg in terms of DPRK sales shenanigans in Malaysia. Open source investigations reveal that North Korea has also been involved – albeit to an unclear degree – with a Malaysian company apparently marketing North Korean designed military vessels including miniature submarines. Evidence, including a recent US sanctions listing in 2016 and a flashy Youtube video, suggest that the company – Kay Marine Sdn Bhd – has collaborated with North Korean partners and may have marketed North Korean designed military vessels since the UN arms embargo first entered force in 2006.

In 2016, the US State Department designated several companies under the Iran, North Korea, and Syria Nonproliferation Act including Kay Marine Sdn Bhd, whose designation slipped attention at the time. Kay Marine is a shipbuilding company that has supplied vessels to customers including the Malaysian and Australian governments. The US has not provided a reason for Kay Marine's designation – although it must be due to evidence of the company trading with Iran, Syria or North Korea. A search of Kay Marine's details under the Malaysian corporate registry shows no evidence

of North Korean ownership. However, other evidence suggests that Kay Marine may have been collaborated with North Korea, and has possibly marketed North Korean designed products.

Hints of Kay Marine's involvement with the DPRK have previously appeared in the Malaysian press. A November 2006 interview with Kay Marine's managing director suggested that the company had supplied North Korea in the past – the MD even stated that “the company was awaiting word from North Korea on a contract that would use technology from that country”. He also noted that “North Korea needs small patrol boats to guard against infiltration”. The previous month the UN had passed Security Council Resolution 1718, which prohibited the export of various arms to North Korea, including “war ships.” In 2007, another Malaysian news article reported that Kay Marine's Chairman had stated that “the company was also forging cooperation with North Korean experts to manufacture assault boats.”

### **A North Korean Marketing Video?**

YouTube, of all places, is where Kay Marine's apparent relationship with North Korea gets really interesting. In 2011, a video was posted on a YouTube account apparently belonging to Kay Marine which raises further questions regarding Kay Marine's activities. Against a soundtrack of non-descript 1980s rock music featuring intolerably long guitar solos (the video's backing music is apparently provided by Grammy nominated guitarist Joe Satriani) the video features a selection of marine hardware. The first half of the video features a selection of civilian boats, including rigid inflatable boats, speed boats, a ferry-style “landing craft”, a self-righting “search and rescue boat” and an aluminum coast guard patrol boat. The video lists Kay Marine's alleged customers including the Malaysian armed forces, Royal Malaysian Police and a variety of companies. So far, it's all pretty mundane and consistent with the company's broader digital footprint.

However, halfway through the film, the screen fades to black and a second video begins, again starting with the company's logo. This time the title page states “Advanced Military Boats from Kay Marine.” The video proceeds to feature around six military craft showing off their paces – from a “small patrol boat,” to a large military hovercraft, and a miniature “small submarine.” The video ends with a periscope-like electronic sensor object (all vessels are provided with names/designations in the video).

Analysis of the video and comparison of these vessels with existing designs provides interesting results. Except for one generic-appearing patrol boat, these vessels all bear uncanny similarities to products designed in North Korea and used by DPRK clients including Iran.

“TB 16 16Mtr. HIGH SPEED TORPEDO BOAT”

The first vessel bears a striking resemblance to the Iranian Peykaap patrol boat which the US Office of Naval Intelligence (ONI) suggests was based on a North Korean design. Some images of Iran's Peykaap craft from state media have been assembled here. The video suggests the boat carries an “armament” of “2Rounds x 324mm Torpedo.”

“TB16D 16 Mtr. HIGH SPEED SEMI-SUB TORPEDO BOAT”

2The second vessel – with its distinctive three strutted spoiler – bears a strong resemblance to the Taedong-C torpedo boat (Iranian designation Gahjae class). The US ONI has suggested that two DPRK-designed semi-/submersible vessels were transferred to Iran by North Korea in the early 2000s. There's an image and schematic of the Taedong-C here.

“TB17D 17mtr. SUBMERSIBLE TORPEDO BOAT”

The third vessel bears a strong resemblance to the Kajami submersible torpedo boat currently in service in Iran. This may be the second semi-/submersible boat that Iran received from North Korea in the early 2000s, according to ONI. There is a nice image and schematic of a Kajami here.

**“PB21 21Mtr. HIGH SPEED PATROL BOAT”**

The fourth vessel is difficult to identify.

**“LHC 24 24Mtr. LANDING HOVERCRAFT”**

What appears to be three different types of hovercraft are displayed in the fifth segment of the video, including one that bears a strong resemblance to those displayed in a 2013 exercise (the footage of which was apparently also digitally manipulated).

**“MS 29 29Mtr. SMALL SUBMARINE”**

The final vessel displayed – the most exciting – looks to be a Yono type miniature submarine. The sub’s dimensions in the video (2.75m beam and 29m length) are consistent with dimensions listed online. A nice image of a Yono class can be found here.

The sub is clearly the “piece de resistance.” Sat in a yard on a cradle on rails, the sub is filmed from different angles with the anchor seductively raised and lowered, and a small external propeller (likely for small scale maneuvers) rotated. The boat bears a strong resemblance to the Yono class submarine, a type that South Korean reports suggested was a strong candidate for having sunk the South Korean ROKS Cheonan corvette in 2010, killing 46 sailors.

Interestingly, the products shown in the video are consistent with the product line of notorious North Korean arms trading firm, Green Pine Associated. Green Pine was listed under UN sanctions in 2012, with the summary concluding:

“Green Pine has been identified for sanctions for exporting arms or related material from North Korea. Green Pine specializes in the production of maritime military craft and armaments, such as submarines, military boats and missile systems, and has exported torpedoes and technical assistance to Iranian defence-related firms.”

**A North Korean Submarine Yard in Malaysia?**

Finding evidence which supports any hypothesis that any of these vessels are actually being manufactured in Malaysia – as opposed to simply being marketed from there – has been difficult. The midget Yono class submarine is certainly the most distinctive piece of equipment shown in the video. That this submarine in the video (despite its rather dodgy looking welds) may have been manufactured in Malaysia by Kay Marine is a far-fetched idea to say the least.

Kay Marine’s online profile suggests that the company employs around 120 people and has six sites – mostly offices, one warehouse or industrial unit (away from the water) and one shipyard. The shipyard has a slipway around 50m long and was fairly simple for us to geo-locate using open source techniques. This shipyard, which is definitely not the one hosting the submarine in Kay Marine’s YouTube video, features in a second video hosted on Kay Marine’s YouTube account. This second video documents the launch of a research ship, the RV Discovery, that Kay Marine company built for a local university (the ship was marred by a corruption scandal, but that’s another story...).

A news article detailing defects with the RV Discovery perhaps provides some insights into Kay Marine’s capability (or willingness to cut costs):

“Among the defects were: the installation of an electronic cable beneath a generator (making it a fire hazard); failure to encase the high pressure oil hose with an anti-splashing tape; the lamps in the steering gear compartment not working; and the life rackets [sic] exceeding their life expectancy. This was on top of broken air conditioners, closed-circuit television (CCTV) and general shipping equipment.”

This RV Discovery video featuring Kay's shipyard, along with another filmed by students as part of a college project, suggests that the capability possessed by Kay Marine at this site and within a warehouse at an unclear location is pretty basic. In fact there is no evidence to suggest that the company has the capability to manufacture even the most simple patrol boats of North Korean design featured in the video.

The final item advertised in the Kay Marine YouTube sales video is an outlier – a piece of equipment, rather than a maritime vessel. This "PASSIVE INFRARED DETECTOR" appears to be a periscope used on submarines similar to the Yono. While virtually no close-up images are available online of North Korean submarines, a comparative examination can be made of images of Iranian Ghadir submarines, with Iran being an export partner of North Korea for Yono type submarines since the early 2000s. Indeed, Iran's former president Ahmadinejad inspected a Ghadir submarine at an Iranian naval base in 2008, and was pictured emerging from a hatch right next to a very similar looking detector.

The sensor is featured in the video sat behind a table next to a box (likely holding electronics), a basic looking computer screen and a joystick. The sensor is apparently demonstrated, with a screenshot of its interface showing a ship in regular optical mode, and then white, apparently in a heat-signature mode. The screen also shows the sensor pointed at a moving vehicle and some people wearing glasses.

Following the sinking of the ROKS Cheonan, South Korean media quoted intelligence sources as noting that the Yono included advanced sensors: the Yono "is similar to the shark-class submarine and was built recently for export, equipped with night-vision equipment and other high-tech gadgets, as well as a unique structure to enhance its stealth capabilities."

#### "Built for Export"

Is it possible that the DPRK is exporting submarines to customers abroad, as the Kay Marine YouTube video suggests? Historical evidence suggests that it is. In 1996, a strapped for cash North Korea exported two Yugo class (predecessor of the Yono class) midget submarines to Vietnam. Two further incidents (covered in Andrea Berger's Target Markets) suggest North Korea's interest in – or openness to – submarine export. According to a leaked State Department cable, the North Korean deputy Defence Minister visited Nigeria offering to sell "anything in its inventory" in 2004 including "missiles and submarines" because Pyongyang needed hard currency. In the 2000s, North Korea exported the Yono class to Iran, with US government sources suggesting Iran had seven by 2007.

The issue of submarine parts trafficking has been raised more recently following the 2011 interdiction of a shipment of submarine parts in Taiwan, which was noted by the UN Security Council's Panel of Experts in their 2013 report. The Panel's 2015 report noted these parts were brokered by Green Pine Associated Corporation and allegedly procured in the US. The 2016 report provides further detail, noting that:

"The consignments were shipped from Vienna by an Austrian national, Josef Schwartz, through his company, Schwartz Motorbootservice & Handel GmbH. He had traded with the Democratic People's Republic of Korea on multiple occasions in the past, including violations and attempted violations of the luxury goods ban. The Panel confirmed that he had assisted Green Pine in evading the arms embargo,"

There is also evidence that Green Pine has exported services relating to marine craft and patrol vessels, having assisted Angola with revamping some of its Mandune class naval patrol vessels according to the Panel's 2017 report. Further evidence also presented by the Panel suggests that the company explored Sri Lankan interest in ships.

Growing evidence of Green Pine's role in conventional and broader proliferation activities resulted in the UN Security Council's designation of Green Pine in 2012. Green Pine's ongoing activities also led the Panel to warn that states should enhance vigilance for possible trafficking of "Maritime electronics (radars, sonars, compasses and the like) that can be used for naval vessels" in 2016. Considering North Korea's submarine-launched ballistic missile program, the Panel suggested in 2017 that "Member States should be vigilant regarding the export of dual-use commercial items that could contribute to the submarine programme." South Korea also produced a "Tailored watch list for submarine parts" in late 2016.

Conclusion: Manufacturing or Marketing? Unclear

In sum, two questions remain: what is the true nature Kay Marine Sdn Bhd's relationship with North Korea (indeed if any has endured)? And what is this strange YouTube video with midget submarines and squealy guitar solos?

The alleged comments by the managing director and chairman of Kay Marine in the mid-2000s suggest that there were prospects for a relationship or contract with North Korea working on assault vessels after UN sanctions were put in place in 2006. It is unclear whether this contract came to fruition. Other comments by Kay Marine officials suggest that Kay Marine exported vessels to North Korea, although this was likely before UN sanctions came into place in 2006. However, the 2016 sanctioning of Kay Marine by the US suggests that the company was still in some way involved with its North Korean partners.

The 2011 YouTube video raises red flags in this respect. A marketing film of unclear origin, branded with the Kay Marine's logo, and including at least five weapons systems which appear to be of North Korean design. The origins of the footage are unclear, although certainly prior to 2011 when it was posted online. It is possible that separate segments of the film featuring different vessels may have originated in different time periods. The resemblance of the submarine and stated dimensions (29m, 2.75m) suggest that it is a Yono (not a Yugo) class. With North Korean efforts to export to Iran beginning in the early 2000s, this segment could date to this period or earlier. The design of the vessels, and the lack of similar images in the public domain, suggests that the footage originated in North Korea.

All the available evidence suggests that Kay Marine has marketed arms on behalf of North Korea, possibly for the benefit of Green Pine Associated, a company which has a track record of exports and international collaboration in marine markets. North Korea is known to have marketed arms before using "hard-copy" marketing material (See Target Markets). The Reuter's investigation also revealed a 2017 marketing video (complete with a dodgy techno soundtrack) which has been posted by James Pearson on Twitter. However, this video is both significant because of its age and its contents. It appears to be custom made for or by Kay Marine because its logo is attached (alongside footage of seemingly legitimate products in the first half). While the full story of Kay Marine's involvement is unclear, at the very least it would be prudent to suggest that the UN Panel of Experts investigate the issue further in their 2018 report.

<http://www.armscontrolwonk.com/archive/1203180/daniel-salisbury-a-malaysian-shipyard-with-north-korean-connections/>

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ECN Magazine (Rockaway, NJ)

## **Tech Ops Squadron is Heartbeat of Nuke Treaty Monitoring From Air, Sea, Space**

By Susan Romano

May 24, 2017

When the Defense Department needs bombs on target or fighters in the air, they reach out to any number of flying wings within the Air Force to task their squadrons to accomplish that mission. Yet when they need near-real time data of potential nuclear detonations, to include ballistic missile detection, radioactive plume debris collection, seismic activity or gamma ray emissions, there is only one wing within DOD that can meet that need.

The Air Force Technical Applications Center is the sole organization in the Defense Department whose mission is to detect and report technical data from foreign nuclear explosions. One of the ways that mission is accomplished is through the efforts of Airmen assigned to AFTAC's Technical Operations Squadron.

TOPS, under the command of Lt. Col. Donald W. Wittenberg, is responsible for conducting worldwide surveillance and reconnaissance missions using its maritime and airborne assets in order to provide national authorities with quality technical measurements that may involve nuclear weapons of mass destruction.

"My squadron of 11 officers, 14 enlisted and nine civilians directs and coordinates nuclear treaty monitoring efforts through the employment of the WC-135 Constant Phoenix aircraft as well as our two ship-borne radar platforms, Gray Star and Cobra King valued at more than \$2.2 billion," said Wittenberg. "These assets allow us to accurately monitor space, missile or weapons tests that may pose potential threats or hazards to our nation or our allies."

Cobra King and Gray Star are state-of-the-art mobile radar systems that consists of S and X-band radars that AFTAC relies on to provide global, high resolution, multi-wavelength radar data to the Missile Defense Agency and DOD's strategic community.

"Essentially, each ship's main job is to monitor any tests of rockets using her S-band and X-band radars. The S-band sensor sweeps vast expanses of sky for possible missiles in flight, while the X-band radar zeroes in to closely track a target," Wittenberg explained.

According to the TOPS commander, both are capable of collecting radar data on orbiting satellites and tactical ballistic missiles. Each vessel consists of two radar systems and numerous support systems including automatic data processing equipment, navigation and a full communications suite.

"Their mobile instrumentation platforms are one-of-a-kind systems with extremely critical performance characteristics," Wittenberg said. "The radar systems aboard USNS Invincible (Gray Star) and USNS Howard O. Lorenzen (Cobra King) allow us to execute our treaty monitoring responsibilities. But what makes it unique is the mission commander aboard these U.S. Navy ships is an Air Force company grade officer – an Airman assigned right here in TOPS. Traditionally, the MCs are captains from the space and missile career field and the combination of those skill sets really complement each other and enhance the understanding of foreign tests and capabilities."

Typically, MCs will be at sea for 60 to 90 days at a time, with most officers going out to sea twice a year. During the last 12 months, TOPS has included nuclear missile officers with a 13N Air Force Specialty Code into the mix for leadership opportunities.

The mission commander's ultimate responsibility is to ensure the platform team members are able to successfully collect mission data. In addition to daily mission taskings, the MC works closely with

experts from Military Sealift Command to schedule port visits and develop a prioritized listing of necessary ship-related maintenance whenever the vessel is in port or at the shipyard.

From sea to air, Wittenberg's Airmen are involved in nearly all aspects of AFTAC's treaty monitoring responsibilities. The center's airborne platform is an integral part of TOPS' mission execution.

Commonly referred to by the media as a 'sniffer plane,' the WC-135 has been in the Air Force inventory since 1965 and currently supports the Limited Test Ban Treaty of 1963, which prohibits any nation from testing nuclear weapons above ground. The Constant Phoenix is the only aircraft in the USAF that conducts air sampling operations. The cockpit crews are from the 45th Reconnaissance Squadron at Offutt Air Force Base, Nebraska, while the special equipment operators are from AFTAC's Detachment 1, also at Offutt AFB.

"The WC-135 flies in direct support of the U.S. Atomic Energy Detection System and maintains the most advanced atmospheric research equipment in the Air Force," said Wittenberg. "The SEOs are highly proficient and well-trained to perform this complex mission. While we don't discuss specific ongoing operational taskings as a matter of policy, my team has averaged more than 160 days of temporary duty or deployment over the past year flying background sorties to establish baseline levels of atmospheric debris. These Airmen are incredibly motivated to get the job done, no matter where in the world that job may be."

He added, "We conduct these airborne sampling missions to help us understand what already exists in the atmosphere. We typically fly over the Indian Ocean, Mediterranean Sea, Bay of Bengal, the Polar Regions, the Far East, and off the coasts of South America and Africa to ensure signatories are adhering to established nuclear treaties. It's a busy mission, and an incredibly invaluable one as well."

TOPS is one of five squadrons within AFTAC's wing structure, and the center's commander had nothing but the highest of praise for Wittenberg and his Airmen.

"The Airmen of TOPS are truly just that – the tops at what they do," said Col. Steven M. Gorski, the AFTAC commander. "They are responsible for a critical link of information that has the potential to be up-channeled as high as the desk of the President of the United States, and that is a huge responsibility. They continuously demonstrate their expertise, sometimes under austere and exhausting conditions, and I couldn't be more proud of them."

Wittenberg matched his commander's accolades.

"I am humbled to be a part of such a tight-knit team that takes pride in performing the mission," he said. "From the youngest Airmen to the most senior civilian, I see an organization that cares for each other and epitomizes the Wingman ideals. Their professionalism and teamwork inspire me every day."

<https://www.ecnmag.com/news/2017/05/tech-ops-squadron-heartbeat-nuke-treaty-monitoring-air-sea-space>

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Arms Control Wonk (Washington, DC)

## **North Korean WMD: A Guide to Online Resources**

By Rick Gladstone

May 22, 2017

North Korea's nuclear and missile programs are the topic du jour in the WMD world, but if you're trying to get smart about the subject, where should you turn? The amount of material never gets any smaller, and you've nearly got to be an expert in your own right to judge what's what.

I won't try to catalogue and evaluate everything out there. Instead, I'd like to point out a handful of good things, say why I think they're good, and note any concerns or qualifications. My emphasis will be both on recent, up-to-date publications and on older materials of enduring value. I'm also sticking with what's openly accessible online, in English. A survey of the published literature is out of scope for today, and I'm not qualified to sift works in Korean, Japanese, etc. The focus, furthermore, will be on Weapons of Mass Destruction, with one partial exception: materials concerning how the regime functions and sees the world. That tells us, among other things, why WMD are so important to Pyongyang.

Obviously this is not a comprehensive list, and it represents only my own judgments. Also, I have no intention of keeping this page up to date. What you see is what you get! Enjoy.

The single most comprehensive resource

The NTI North Korea WMD country profile. A sprawling collection of useful material, updated a few times a year: nukes, chem, bio, missiles, production facilities, the whole deal. Caveat: It's so big that it can't easily be reviewed and refreshed in its entirety as new information comes to light. But by the same token, it's the single resource that's closest to exhaustive.

### **The missile program**

The NTI/CNS North Korea missile test database. Created and maintained by Shea Cotton and colleagues and first released in April 2017, this is most current and complete publicly available dataset on North Korean missile tests and space launches.

Joseph S. Bermudez Jr., "A History of Ballistic Missile Development in the DPRK," CNS Occasional Paper No. 2, Nov. 1999. Although this paper is getting long in the tooth, I still find myself returning to it.

Daniel A. Pinkston, "The North Korean Ballistic Missile Program," Strategic Studies Institute, US Army War College, Feb. 2008. This one is also getting old, but is particularly valuable for its look at North Korean science and technology, which remains under-examined in English-language publications.

Joseph S. Bermudez Jr., "DPRK Ballistic Missile Infrastructure: The Tae-sung Machine Plant," KPA Journal, Vol. 2, No. 5, May 2011. A good look at North Korea's primary missile-building complex, at least for liquid-fueled missiles.

Joshua Pollack, "Ballistic Trajectory: The Evolution of North Korea's Ballistic Missile Market," Nonproliferation Review, Vol. 18, No. 2, July 2011. Pretty much what the title says: a reconstruction of the changing patterns of North Korean ballistic missile exports.

Jeffrey Lewis, Melissa Hanham, and Amber Lee, "That Ain't My Truck: Where North Korea Assembled Its Chinese Transporter-Erector-Launchers," 38North.org, Feb. 3, 2014. A virtuoso sleuthing effort, identifying the specific building inside North Korea where its first ICBM launch vehicles were assembled. This is not easy to do!

Twitter. Some of the best high-resolution photographs and rapid analysis of North Korean missile displays and tests can be found here. Some of the most active feeds belong to Tal Inbar, Xu Tianran, Joseph Dempsey, Dave Schmerler, Melissa Hanham, Scott LaFoy, Ankit Panda, and Nathan J. Hunt.

David Wright's blog posts at AllThingsNuclear.org. Lately, as North Korea has begun testing missiles of longer ranges, it has been "lofting" them, that is, shooting them higher than normal, so they fall well short of their maximum range, and don't land in Japan or fly over it. David Wright has been rapidly doing the math to estimate their full range.

The ArmsControlWonk podcast. North Korean missile tests are a regular feature here, in discussions usually featuring Jeffrey Lewis, Aaron Stein, and Scott LaFoy.

### **The nuclear program**

Mary Beth Nikitin, "North Korea's Nuclear Weapons: Technical Issues," Congressional Research Service report RL34256, Apr. 3, 2013. This report cries out for an update, but it covers just about everything you want to know through early 2013. It's probably the single best resource as of that date.

Daniel Wertz and Matthew McGrath, "North Korea's Nuclear Weapons Program," National Committee on North Korea, Jan. 2016. In the absence of an update from Nikitin, this eight-page brief must do! It covers a great deal.

Balazs Szalontai and Sergey Radchenko, "North Korea's Efforts to Acquire Nuclear Technology and Nuclear Weapons: Evidence from Russian and Hungarian Archives," Cold War International History Project Working Paper No. 53, August 2006. A remarkable collection of translated archival materials from the Cold War. More documents have since become available at the Wilson Center Digital Archive. This is not a casual read, but it's essential for serious researchers.

Choe Sang-hun, "North Korea Learning to Make Crucial Nuclear Parts, Study Finds," New York Times, Sep. 23, 2013. A look at North Korea's efforts toward reducing dependence on imported equipment and materials for uranium enrichment, a strategy with implications for other strategic programs as well.

Jeffrey Lewis and Nathaniel Taylor, "North Korea's Nuclear Year in Review—And What's Next," NTL.org, Dec. 20, 2016. This feature includes an extraordinary 3-D interactive map and VR tour of the Punggye-ri nuclear test site. It starkly concludes that North Korea is preparing for a very large number of underground nuclear tests, and has the option of conducting much larger tests than before.

Frank Pabian and David Coblenz, "North Korea's Punggye-ri Nuclear Test Site: Analysis Reveals Its Potential for Additional Testing with Significantly Higher Yields," 38North.org, Mar. 10, 2017. A more detailed analysis that nicely complements the previous item in this list.

David Albright, Sarah Burkhard, Mark Gorwitz, and Allison Lach, "North Korea's Lithium 6 Production for Nuclear Weapons," ISIS-online.org, Mar. 17, 2017. A study that uses North Korean scientific literature, among other sources, to assess the country's progress toward making hydrogen bombs.

### **Nuclear military strategy**

Max Fisher, "The Hidden Messages in North Korea's Military Parade," NYTimes.com, Apr. 18, 2017. An evaluation of the roles of the array of missiles, new and old, displayed in Pyongyang this April 15.

Bonnie Berkowitz, Laris Karklis, and Tim Meko, "North Korea showed off a lot of missiles. What might be its targets?", WashingtonPost.com, May 18, 2017. The authors take up the flip side of the

coin, looking into specific targets for nuclear strikes. Both of these features avoid the jargon of Western nuclear strategy (“counterforce” and “countervalue”), allowing the authors to try to assess North Korea’s approach on its own terms.

### **Chemical and biological weapons**

“North Korea’s Chemical and Biological Weapons Programs,” International Crisis Group Asia Report No. 167, Jun. 18, 2009. A wide-ranging look at both types of weapons and their role in North Korean military thinking, to the extent we can know. (Crisis Group reports don’t list authors, but this one appeared when Daniel Pinkston was their guy in Seoul.)

Mark Fitzpatrick, “North Korean Proliferation Challenges: The Role of the European Union,” EU Non-proliferation Consortium, Non-proliferation Report No. 12, June 2012. Don’t be misled by the subtitle; this 16-page brief is of interest to more than EU readers. It distills the main points of a much larger publication on North Korea produced by the International Institute for Strategic Studies in 2011 (not available online). Unfortunately, the nuclear and missile sections are now completely out of date, but read it for the chem and bio portions.

Melissa Hanham, “Kim Jong Un Tours Pesticide Facility Capable of Producing Biological Weapons: A 38 North Special Report,” 38North.org, Jul. 9, 2015. Quite simply the best example of using open-source analysis to assess an aspect of North Korean WMD capabilities that has yet been published, blending technical understanding with a keen sense of how the North Korean regime uses ambiguous signals for deterrence or coercion.

### **North Korean political economy**

Kim Kwang Jin, “The Defector’s Tale: Inside North Korea’s Secret Economy,” World Affairs Journal, September-October 2011. (Alternative link if the above doesn’t work.) A penetrating explanation of North Korea’s parallel economies during the Kim Jong Il era (1994-2011): the anemic People’s Economy, and the flush Royal Court Economy, which supports both the ruler’s personal needs and North Korea’s WMD programs.

Choe Sang-hun, “As Economy Grows, North Korea’s Grip on Society is Tested,” New York Times, Apr. 30, 2017. An eye-opening look at how much has changed in the North Korean economy since Kim Jong Un assumed power in December 2011.

Atsuhito Isozaki (with James Person), “Understanding the North Korean Regime,” Wilson Center Asia Program, April 2017. A concise volume that explains North Korean regime ideology, structure, and perceptions through the lens of official propaganda, a rich and deeply revealing set of sources when studied closely. The author, a Japanese scholar, is familiar with a much wider range of scholarship than his American counterparts, having studied Japanese, South Korean, Chinese, and American works. One caveat: in its discussion of North Korean ideology, this monograph dwells on the legacy ideologies of *juche sasang* (the “self-determination” idea) and *songun chongchi* (military-first politics), neglecting the emergence of what now appears to be Kim Jong Un’s own signature ideology, *jaryok jagang* (“self-reliance and self-development”). It’s mentioned briefly in the previous item in the guise of “*jagang*, or self-empowerment,” but has yet to receive sustained attention in English-language studies of North Korea.

### **A bonus item**

Max Fisher and Jugal K. Patel, “What One Photo Tells Us About North Korea’s Nuclear Program,” New York Times, Feb. 24, 2017.

I didn't know where exactly to place this one in the categories above, but wasn't about to leave it out. It's a case study in several methods of open-source analysis, and something I was very pleased to be associated with. This feature shows just how stimulating the study of North Korean WMD can be!

<http://www.armscontrolwonk.com/archive/1203226/north-korean-wmd-a-guide-to-online-resources/>

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NK News (Seoul, South Korea)

## **U.S., South Korean Troops Simulate Raid on North Korean WMD Sites**

By Dagyum Ji

May 18, 2017

*U.S. and ROK forces conducted an air assault from ROK Navy ship in drill only publicized on Thursday*

The United States Army and the Republic of Korea Navy (ROKN) recently conducted a joint ship-to-shore air assault anti-North Korean WMD drill, the 1st Infantry Division of the U.S. Army revealed on Tuesday night, in operations only widely publicized in South Korea on Thursday.

The U.S. Army said the drill, dubbed "Warrior Strike 7", was conducted at Camp Stanley and the Rodriguez Live Fire Complex, both of which lie north of Seoul, but didn't provide details on the day the raid took place and the number of participating soldiers.

Two groups of the 1st Infantry Division took part: the Iron Rangers of the 16th Infantry Regiment and the 2nd Battalion of the 34th Armored Regiment, as well as units from the 2nd Infantry Division.

"The Iron Rangers conducted a ship-to-shore Air Assault from a ROK Navy ship to an underground training facility," the Iron Rangers said on Tuesday.

The divisions took part in an air assault designed to "simulate a counter-WMD operation" launched from the 14,500-ton Dokdo-class Landing Platform Helicopter amphibious assault ship (LPH 6111) – the largest warship in South Korea's navy.

The drill would be the "first time in recent history" that the U.S. Army conducted an assault from an ROK Navy ship, Brigadier General David J. Francis, deputy commander of the 2nd Infantry Division of the 8th U.S. Army, told a summit in Nashville, Tennessee in late April, several weeks ahead of the operation.

Francis said that the Warrior Strike exercises would enable the U.S. and the South to prepare for a future assault on North Korean WMD-holding sites.

"We know for a fact [North Korea] has multiple locations that have WMD, and those sites are important to us," Francis said.

"So, while we are conducting direct action, combined arms maneuvers to defeat and destroy enemy forces, we are also focused on getting control of all of those sites that contain WMD."

South Korea's Ministry of National Defense (MND) declined to comment on whether the drill is related to counter-WMD operations, but photos released by the 1st Infantry Division showed a mock nuclear warhead and chemical substances located at an imitation underground facility.

While details were not given about the scale of the drills, previous “Warrior Strike” drills in February and March offer clues as to how many troops may have participated.

Warrior Strike 6 was staged alongside the annual joint Key Resolve and Foal Eagle military drills at the Rodriguez Live Fire Range in Pocheon on March 21 and 22, according to the 1st Infantry Division.

400 U.S. and South Korean troops took part in the exercise, whose stated purpose was to allow the soldiers to hone their skills in counter-WMD operations.

U.S. soldiers dropped from Black Hawk and Chinook helicopters to meet South Korean troops and assault an imitation village containing multiple booby-trapped labs suspected of making the lethal sarin nerve agent.

Warrior Strike 5 was conducted at the same location between February 14 and 17. More than 400 U.S. soldiers from Task Force Iron Rangers and around 200 South Korean Army soldiers participated in the exercise.

Meanwhile, South Korean Navy said on Tuesday that a U.S. aircraft carrier-led strike group has been participating in U.S. – South Korean joint military exercises on the Korean Peninsula since the end of the April, with the closing date for the operations yet to be decided.

<https://www.nknews.org/2017/05/u-s-south-korean-armies-simulate-raid-on-north-korean-wmd-sites/>

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The Japan News (Tokyo, Japan)

## **Conducting ‘Quiet Diplomacy’ / Focusing on Common Ground for Nuclear Weapons Ban Treaty**

Author Not Attributed

May 21, 2017

Izumi Nakamitsu took office as U.N. undersecretary general and high representative for disarmament affairs — the highest U.N. post dealing with disarmament affairs — on May 1. She is currently the highest-ranking Japanese official at the United Nations. In a recent interview with The Yomiuri Shimbun, Nakamitsu revealed her intention to “quietly” support discussions between member nations on reducing armaments. The following are excerpts from the interview.

The Yomiuri Shimbun: What are you in charge of specifically?

Nakamitsu: When people hear I’m “responsible for disarmament,” they usually think of nuclear disarmament. However, the responsibility covers a wide range of areas, from chemical and biological weapons to outer space and cyberspace. It also includes artificial intelligence used for robot weapons and 3-D printers capable of reproducing weapons. The latter two fields require a set of rules to be drawn up as the technologies progress.

It is not easy to achieve progress in disarmament because it is closely connected to each nation’s security. Looking back on history, developments in disarmament and nuclear-nonproliferation occurred when the Cold War between the United States and the Soviet Union grew tense. As for issues involved with North Korea and Syria, I want to cleverly introduce political discussions and other measures to [the tense situations] to seize an opportunity for disarmament.

Q: In the United Nations, negotiations to enact a nuclear weapons ban treaty will resume in June.

A: If we don't get nuclear powers involved, it won't lead to disarmament. Staying consistent with the nuclear nonproliferation treaty (NPT) is also important. I hope the Japanese government, with other nations, will act as a bridge between the nuclear and non-nuclear powers. The crucial thing in negotiations is to focus on common ground and consider the furthest possible point on which the relevant parties can compromise. We want to support the discussions of member nations in a quiet manner.

Q: I've heard U.N. Secretary General Antonio Guterres told you to "shake [things] up" when he offered you the post.

A: Upon seeing Ms. Sadako Ogata [a former U.N. high commissioner for refugees] when I was young, I was struck with the feeling that the United Nations is an organization where individuals can exercise their own unique abilities. You can try interesting things under a leader who has a clear vision. However, the secretariat's task is to conduct "quiet diplomacy." I think it's better that I'm not so visible.

The United Nations is neither an organization that perfectly embodies its ideals nor a completely useless body. I want to act as a messenger so that Japanese can deepen their understanding of the real United Nations.

(This interview was conducted by Yomiuri Shimbun New York Bureau Correspondent Junya Hashimoto.)

Izumi Nakamitsu

Under secretary general and high representative for disarmament affairs, the United Nations Nakamitsu, 53, completed graduate school at Georgetown University in the United States. She became a member of the Office of the U.N. High Commissioner for Refugees in 1989. She built her career in countries including the former Yugoslavia. She has two daughters with her Swedish husband, who is a diplomat.

<http://the-japan-news.com/news/article/0003708876>

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The Australian (Surrey Hills, Australia)

## **Asia Nuclear Arms Race Feared**

By Simon Benson and Emily Ritchie

May 26, 2017

Senior Trump administration officials have told Foreign Minister Julie Bishop privately that they fear an inevitable nuclear arms race in the Asia-Pacific if an increasingly belligerent North Korea is not reined in as it escalates its intermediate-range missile program.

The warning that other countries in the region, including Japan, would be compelled to seek their own nuclear military capability as a defence measure against the rogue nation, were raised directly with Ms Bishop this week in New York, where she held meetings with the US ambassador to the UN, Nikki Haley.

"In my discussions with senior officials in both South Korea and the US, the view was that should North Korea ever be recognised as a nuclear weapons state, then Japan and (South) Korea would have little option than to develop their own nuclear weapons capability," Ms Bishop told The

Australian. "That is why there is such a strong view that North Korea must be denied this capability."

South Korea's senior leadership raised similar concerns with Ms Bishop in meetings last month.

On radio this morning Ms Bishop said it was a worry for the US, China, Japan and South Korea.

Montenegro Prime Minister Dusko Markovic, pale blue tie, after appearing to be pushed past by Donald Trump at the NATO summit. Picture: APTrump tells NATO to pay up

"The concern is that if they are not stopped then they will be able to meet their aim, which is to launch an intercontinental ballistic missile with a nuclear warhead capable of reaching the United States," Ms Bishop said in Sydney's 2GB.

"North Korea currently is rebuffing overtures from China, which is frustrating China. In the past, it was seen as very much in the sphere of influence and a branch of their communist party. But now North Korea is being far more belligerent...offensive and making snubs to China."

Ms Bishop expressed concerns over North Korea becoming a rogue nuclear state, and that Australia, America and their allies have a window of opportunity to prevent such developments.

"If we allow North Korea to develop nuclear weapons capability, combined with their ballistic missile capability, then they will become a rogue nuclear state in breach of international agreements," Ms Bishop said.

"If we allow NK to continue to flout UN Security Council resolutions in clear and flagrant breach of international laws, you then have a rogue nuclear state. But we have a window of opportunity in relation to economic sanctions and this is where we need China's support. China has in recent times agreed to impose sanctions and the UN security council is considering other sanctions - financial, travel, a whole range - and if China were to adhere to that sanctions regime, that will change the economic scenario in North Korea and essentially bring it to the negotiating table."

She said, by sending two nuclear submarines to the South Pacific recently, the US was "sending a very strong message (to North Korea) that military options are included on the table and that they are not bluffing."

Ms Bishop is gearing up for the annual AUSMIN ministerial consultations with the US on home soil next month, and says she expects US Secretary of State Rex Tillerson and US Defence Secretary James Mattis to visit for the event.

Arms race a real risk: expert

Australian Strategic Policy Institute executive director Peter Jennings reinforced Ms Bishop's assessment, claiming that a nuclear arms race was now becoming a "real risk". "I think it is a very real concern," he told The Australian yesterday.

"Everything to do with the Korean- Peninsula is hair-raising right now."

Mr Jennings said the window for dealing with the issue was only one to two years.

"The US will want time to let the sanctions work," he said. "But I think 2018 will be crunch time."

Fears of nuclear proliferation in North Asia come as North Korean leader Kim Jong-un seeks to escalate missile launches, the most recent of which was on Sunday, in direct violation of UN -Security Council resolutions. It also follows a reported admission by US President Donald Trump that the US had sent two nuclear submarines to the region.

According to US intelligence officials, the North Korea trajectory for military nuclear ability is getting closer and the development of an intercontinental ballistic missile capable of delivering a nuclear payload that could reach the continental US is “inevitable”.

The developments have ensured that the issue will dominate the AUSMIN defence meeting, which The Australian understands is to be held in Sydney next month.

It will be the first to host senior officials from the Trump administration. Ms Bishop and Defence Minister Marise Payne will hold a two-day summit with US Defence Secretary James Mattis and -Secretary of State Rex Tillerson.

Ms Bishop said “the pace and scale, the tempo” of North Korea’s move towards nuclear weapons was “deeply troubling”. “Even if their missile launches fail, they are increasing their capability,” she said. “This is intolerable ... and the US has said all options are on the table.”

The Foreign Minister stressed that China and the US must engage in a formal dialogue to resolve the situation. “(But) this cannot be resolved by the US alone ... China must play a significant role ... there must be a formal dialogue between the two over North Korea,” Ms Bishop said.

Australia’s role is also becoming more important as the US increasingly turns to Australia for its perspective, due to the strong trade and strategic relationship with China.

The Trump administration has repeated its praise of Australia’s stance on North Korea and its assistance in bringing China into play. Ms Bishop held several high-level meetings with Chinese officials over the past two months, in which she pressed the importance that China intervene to press its neighbour to abandon its ambitions.

The June AUSMIN meeting is regarded as a critical summit that will help to shape US strategic thinking in the region generally and specifically in relation to North Korea.

Mr Jennings was less optimistic about China’s willingness to pursue greater sanctions of its own. “The emphasis at the moment is on sanctions ... my personal view is that it is not going to work,” he said. “I think the time-frame is getting narrower ... Kim is speeding up missile launches ... they obviously feel they are getting closer.”

Mr Jennings said there were three possible scenarios to play out, including an obvious pre-emptive strike by the US.

If a nuclear-capable North Korea was allowed to be established, a second option would be for the US to expand its nuclear umbrella to protect its allies, such as the redeployment of US tactical nuclear missiles into South Korea. Failing that, Mr Jennings said, Japan and South Korea would likely seek to start their own military nuclear programs.

In the case of Japan, which has missile technology as well as a domestic nuclear industry, it is expected that it would be able to achieve this in less than six months.

“But we shouldn’t let them get to that point,” Mr Jennings said.

He agreed with Ms Bishop that the US was “getting very worried”.

<http://www.theaustralian.com.au/national-affairs/foreign-affairs/asia-nuclear-arms-race-feared-as-julie-bishop-and-us-sound-warnings/news-story/fee7229fec15c23f842f6f0e3594b4e2>

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The Diplomat (Tokyo, Japan)

## **Russia to Arm Ground Forces With New Ballistic Missile by 2020**

By Franz-Stefan Gady

May 25, 2017

*The new weapon system will replace a Soviet-era tactical ballistic missile still in service with the Russian Army.*

All missile units of the Russian Ground Forces are expected to be retrofitted with short-range nuclear-capable road-mobile 9K720 Iskander-M (NATO reporting name SS-26 Stone) ballistic missile system by the end of 2020, Russia's Minister of Defense, Sergei Shoigu, told the upper house of the Russian parliament on May 24.

"As for the general-purpose forces, self-sufficient groupings of troops and forces capable of adequately responding to any military security threats will be established in all the strategic directions, including the Arctic, by late 2020," Shoigu said Wednesday, according to TASS news agency. "The Army is expected to have been fully rearmed with modern Iskander-M missile systems by that time."

Shoigu's statement appears to contradict earlier reports by senior Russian military officers that the switch to the Iskander-M ballistic missile would be completed by the end of 2017. "We'll complete the rearmament and the switchover to Iskander complexes across the country this year," the commanding officer of the Russian Ground Forces, Colonel-General Oleg Salyukov, said on February 22.

The Iskander-M was specifically designed to replace the Soviet-era OTR-21 tactical missile which was eliminated by the INF treaty. As I noted in 2016:

The Iskander-M missile [9M723] purportedly was inducted into service already in 2006. Rumors emerged in March and April 2016 that the missile had been deployed to Syria. The missile was also publicly displayed during this year's May 9 Victory Day parade.

The two-stage solid propellant missile allegedly has a range of 400-500 kilometers (310 miles) and its [nuclear-capable] single warhead can carry a payload of about 700 kilograms. It has been specifically designed to evade Western missile defenses and reportedly is able to operate in temperatures ranging from -50 to 50 degrees Celsius (-58 to 122 degrees Fahrenheit).

Earlier this year, I explained:

The tactical ballistic missile can be deployed to destroy a host of different targets including missile and multiple launch rocket systems, artillery batteries, as well as command posts and communications centers. It can be armed with variety of different warheads for that purpose. The total number of 9K720 Iskander-M missile systems currently deployed in the RGF is estimated to be over 100. A shorter-range export variant of the 9K720 Iskander-M missile system has been offered to China, India, and South Korea. However, only the domestic version of the missile can be armed with a nuclear warhead.

One of the last test firings of the missile occurred in August 2016. In February 2017, the Russian military purportedly fired four Iskander-M ballistic missiles against targets in Syria's Idlib province.

<http://thediplomat.com/2017/05/russia-to-arm-ground-forces-with-new-ballistic-missile-by-2020/>

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Horizon Magazine (Brussels, Belgium)

## **Beyond X-Rays - The New Inspection Tools to Thwart Smugglers**

By Helen Massy-Beresford

May 24, 2017

*Criminals who want to smuggle dangerous or illegal substances into Europe could soon find themselves foiled by a new set of high-tech anti-smuggling tools including an electronic sniffer dog and a machine that fires part of an atom at shipping containers.*

The shipping industry is key to Europe's economy, with 3.8 billion tonnes of cargo loaded and unloaded at European Union ports per year. But it is facing a growing security risk as smugglers transport everything from drugs and explosives to counterfeit goods via the sea.

Now, a group of scientists are developing a set of inspection technologies that can check containers for illegal substances, radioactive material, weapons and chemical warfare agents. They can even spot if stowaways are concealed among the contents.

'The idea came about because customs officials need to check an ever-increasing number of containers – for this they need to check them fast without opening them,' explained Guillaume Sannié of France's Alternative Energies and Atomic Energy Commission (CEA).

He coordinates the EU-funded C-BORD project, which is developing five tools for custom agents to inspect containers by building on technologies that are already in use, expanding their scope and developing new methods.

Evaporation-based testing is one tool in the C-BORD toolbox – an electronic device made up of multiple highly sensitive sensors, each attuned to detect a different chemical substance. This is used to analyse the contents of the container, allowing the operator to detect illegal drugs, explosives, chemical agents. It can also detect people.

### **Electronic sniffer dog**

Sannié likened the technology to an electronic sniffer dog. 'We sniff the particles inside the container and analyse them as a sniffer dog would – except that unlike a sniffer dog the machine doesn't get tired.'

The team is also investigating an experimental technology for use when customs officers are still in doubt after using traditional methods such as X-rays – which reveal the shape of an object but not its composition – and the electronic sniffer dog.

They use a machine known as a neutron generator to emit neutrons – particles that help make up the nucleus of an atom – and then fire them at the container, in a similar way to taking an X-ray. By measuring the gamma rays produced as a result, customs officers can glean more information about the chemical composition of what's in the container.

The researchers are also investigating using high-energy imaging made possible by photofission, the process by which a nucleus splits after absorbing a gamma ray, to detect nuclear material. By measuring miniscule timings between high-energy pulses, it's possible to detect whether uranium or plutonium are present in the container.

Before the project finishes in October 2018, Sannié says the team will be testing its range of technologies at two ports – Rotterdam in the Netherlands and Gdansk in Poland as well as in Hungary, where the tests will take place on a land border.

## Safe ports

With about 90 % of the European Union's external trade and 40 % of internal trade transported by ship, keeping Europe's ports safe from threats such as terrorist attacks or organised crime is also a challenge for authorities.

Here, IT and communications systems can play a role, according to the EU-funded SUPPORT project, which brought together 20 European organisations, including businesses, academia and port operators, with the aim of improving security.

The idea was to act as a forum for port stakeholders and security experts to form new standards for port security by sharing information and best practices on issues such as threat and vulnerability assessments, access control, inspections, monitoring and surveillance. The project also looked at standards for fence systems, alarms and CCTV that could be fine-tuned for individual ports, and came up with a set of guidelines and options for port operators to follow.

During the project, the researchers also developed and tested a new IT platform in the ports of Gothenburg in Sweden, Lisbon in Portugal, and Piraeus in Greece. This allows ports to share information on how their security officers can maintain or upgrade security measures and promote security awareness.

'In the end, a lot of the benefits of SUPPORT were about stopping theft and pilfering,' said David Griffiths, Research Information Manager at BMT Group Ltd, the UK-based company that coordinated the project.

[https://horizon-magazine.eu/article/beyond-x-rays-new-inspection-tools-thwart-smugglers\\_en.html](https://horizon-magazine.eu/article/beyond-x-rays-new-inspection-tools-thwart-smugglers_en.html)

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TASS (Moscow, Russia)

### **Russia's Defense Minister Slams Reports on Chemical Weapons in Syria As 'Unreliable'**

Author Not Attributed

May 24, 2017

*The defense minister believes reports on chemical weapons in Syria are becoming an information weapon for political expediency*

The reports about the use of chemical weapons in Syria are becoming an information weapon for political expediency, Russian Defense Minister Sergey Shoigu said at the upper house of parliament, the Federation Council, on Wednesday.

"Based on the games in the media space involving chemical weapons... Some make mere claims that they are used by the Syrian authorities, others say this is not the authorities (that use them - TASS). We've already reached the point where we're thoroughly convinced that the bulk of films and reports are staged, and previously they were also staged. Not only we, many have proved that they are becoming an instrument. You probably remember it started in Iraq when there were reports about various tubes and bottles, but it turned out there had been nothing, though the country had already been destroyed," the minister said.

According to Shoigu, Syria followed Iraq. Russia proposes to form a balanced multilateral commission focused on ascertaining the truth, he said. "When you don't know the truth you don't know what to fight with," he added.

## De-escalation zones in Syria

Russia's military expects to discuss regulations on forces that will work in de-escalation zones in Syria at a meeting in Kazakhstan's Astana in June, he went on.

"We hope that in early June another meeting in Astana will be held where we will be able to reaffirm all regulations on those forces that will be stationed (in de-escalation zones)," Shoigu said.

The participants plan to endorse maps and the creation of checkpoints and safe corridors, which should be located at a 1 km distance between the sides, according to Russia's proposals, he said.

At the meeting, Moscow also expects to discuss further steps on fight against the Islamic State and Jabhat al-Nusra (terrorist groups, outlawed in Russia).

On May 4, Russia, Iran and Turkey agreed to set up four de-escalation zones in Syria. Under a memorandum signed at the talks in Astana, these four zones include the Idlib Province and some areas in the neighboring provinces (of Aleppo, Latakia and Hama), an area north of Homs, the Damascus suburb of Eastern Ghouta, and a couple of provinces in southern Syria - Daraa and Al-Quneitra.

In line with the memorandum, a joint working group was due to be set up within 10 days for defining the exact borders of de-escalation zones and working out details of carrying out monitoring of the ceasefire. The maps of the designated areas should be drafted by May 27.

<http://tass.com/politics/947340>

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Fibre2Fashion (Ahmedabad, India)

## Russia's Defense Minister Slams Reports on Chemical Weapons in Syria As 'Unreliable'

Author Not Attributed

May 21, 2017

Russian scientists claim to have developed a membrane solution capable of protecting military personnel from chemical and biological weapons while remaining air and vapour permeable, in a project ordered by the Fund for Perspective Research. The testing of special suits made of the special membrane fabric is to be completed by the end of this year.

The membrane solution has been developed by chemists from the Saratov State University.

"In cooperation with industrial partners, experimental suits have been made for Defence Ministry and Interior Ministry personnel to wear during a test period. When the testing is over, the possibility of batch production may be considered," Saratov State University president Leonid Kossovich told Russian news agency Tass.

After completion of testing by the end of this year, the material would go for certification, Kossovich said.

"The authorities of the Saratov Region will join the project at the next stage. They are already working on an investment project for launching full-fledged industrial production of the membrane fabric," Kossovich was quoted as saying.

The membrane fabrics are impermeable to water, viruses, bacteria, toxins and allergens, making the wearer safe from the hazardous effects of chemical and biological agents. At the same time, the nanofibre fabric is microporous allowing for air and vapour circulation. The technical fabrics were

created within the framework of a larger project of the Fund for Perspective Research for creating combat gear of the future. The research began in 2014, the new agency reported.

"At the request of a partner in Moscow we are about to start manufacturing a large consignment of the membrane fabric, about seven kilometres in total length," Kossovich said.

The new material may come in handy for making not only military uniform, but also clothes and gear for extreme athletes and polar explorers, according to the report.

"The properties of the Russian product surpass those of its foreign counterparts. Also, the membrane fabric is less costly, with the entire production chain located in Russia.

So far all membrane water-tight air permeable materials have had to be imported. Our product will surely be in great demand on the domestic market. Several major manufacturers have already stated they are interested," Kossovich said.

<http://www.fibre2fashion.com/news/textile-news/russia-s-protective-fabric-against-bio-chemical-weapons-205911-newsdetails.htm>

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TASS (Moscow, Russia)

### **Russian Foreign Ministry: OPCW Not Rushing to Investigate Chemical Incident in Syria**

Author Not Attributed

May 25, 2017

*"It looks like no one is in a hurry to go to Khan Sheykhun for verification of the details," the ministry said*

Shirking of full-scale investigation of the situations where nerve gas was used in Syria casts doubts over the ability of the Organization for the Prohibition of Chemical Weapons (OPCW), the Russian Foreign Ministry said in a comment on Thursday.

"It looks like no one is in a hurry to go to Khan Sheykhun for verification of the details of a case as resounding as this one," it said. "It is really saddening that the the OPCW mission does not show activity in what concerns the establishing of cases of chemical weapons utilization, as it puts off a trip to Khan Sheykhun time and again, making references to unfavorable security conditions," the ministry said.

"All the conditions have been created there in terms of security and compliance with obligations under the Convention," it said.

Representatives of the US, the UK and France fiercely resist attempts to find out who indeed is behind a possible use of sarin in the Syrian Idlib province, it said. The ministry said that on May 23 the UN Security Council had another discussion on the situation around the so-called Syrian chemical dossier.

The ministry said that on May 23, the UN Security Council had another discussion on the situation around the so-called Syrian chemical dossier. "The Western trio of permanent members of the Security Council sought to impart a marked anti-Assad and anti-Russian taint to the event," the ministry pointed.

"It once again confirmed that the 'denouncers' of Damascus are not interested in establishing the truth in the issue as crucial as who stood behind the possible use of sarin in the Syrian province of Idlib on April 4," the ministry said.

"Representatives of the US, UK and France fiercely resist attempts to find out how justified is their 'in absentia' verdict of an allegedly incontestable responsibility of the Bashar al-Assad's government in that chemical attack in the settlement of Khan Sheikhoun," it said.

The incident with the alleged use of chemical weapons in Khan Shaykhun in Idlib province took place on April 4. According to Russia's Defense Ministry, the Syrian aircraft struck terrorists' workshops producing chemical agents. Washington accused Damascus of using chemical weapons, after which the US Navy delivered a missile strike overnight to April 7 on a Syrian military aerodrome in the province of Homs.

<http://tass.com/politics/947689>

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US News & World Report (New York, NY)

### **UN: Chemical Experts Found Sarin Exposure in Syria Attack**

By Edith Lederer

May 23, 2017

*The new UN disarmament chief says a team from the international chemical weapons watchdog found exposure "to sarin or a sarin-like substance" in samples from an April 4 attack in northern Syria that killed over 90 people.*

A team from the international chemical weapons watchdog found exposure "to sarin or a sarin-like substance" in samples from an April 4 attack in northern Syria that killed over 90 people and now wants to visit the opposition-held town of Khan Sheikhoun, a senior U.N. official said Tuesday.

U.N. disarmament chief Izumi Nakamitsu told the U.N. Security Council that the Organization for the Prohibition of Chemical Weapons also submitted a report into the alleged use of chemical weapons near Um Hosh in the Aleppo countryside on Sept. 16, 2016 which indicated the use of "sulfur mustard."

OPCW fact-finding teams have been investigating the alleged use of chemical weapons in Syria but aren't mandated to determine responsibility for attacks. That has been left to a joint U.N.-OPCW investigative body known as the JIM.

Last year, the JIM concluded that the Syrian government used chlorine gas in three attacks and Islamic State extremists used mustard gas in one attack during 2014 and 2015.

Nakamitsu said the two latest reports from the OPCW fact-finding team have been sent to the JIM, which is now studying the findings "and will keep the Security Council informed of its next steps."

Syria agreed to destroy its chemical weapons under a deal brokered by Russia and the United States in 2013 and declared a 1,300-ton chemical arsenal when it joined the OPCW soon after.

That stockpile has been destroyed, but the organization continues to question whether Damascus declared everything in its chemical weapon program.

Nakamitsu said work to address unresolved issues related to Syria's declaration had been expected to move forward during high-level consultations scheduled for early May, but they have been temporarily postponed.

The Syrian government has repeatedly denied using chemical weapons and so has its close ally Russia, which has also carried out aerial attacks.

In the attack in the area of Um Hosh last Sept. 16, Nakamitsu said an OPCW team was deployed at the request of the Syrian government but wasn't able to visit the site.

She said a review of blood samples from two women victims of the alleged attack indicated exposure to sulfur mustard. The team also evaluated a mortar reported to be connected to the incident that was handed over by Russian experts, she said, and "laboratory analysis indicated that this mortar contained sulfur mustard."

As for Khan Sheikhoun, Nakamitsu said the fact-finding mission's report said their team conducted interviews with victims of the alleged attack and witnessed the collection of biomedical samples from casualties in an unidentified neighboring country.

The team also received samples from dead animals reported to have been close to the site of the incident and environmental samples "from close to the impact point," she said. It also attended autopsies of three victims and witnessed biomedical samples being taken from their bodies.

Nakamitsu said there is still work to be done in the Khan Sheikhoun investigation and OPCW Director-General Ahmet Uzumcu requested U.N. security, logistical and operational assistance for a visit to the town by the team. She said Secretary-General Antonio Guterres responded positively on May 4 and indicated that planning is under way.

Nakamitsu said she is in contact with Uzumcu to help ensure that any visit to the site "would be accompanied by the most stringent security assurances."

<https://www.usnews.com/news/world/articles/2017-05-23/un-chemical-experts-found-sarin-exposure-in-syria-attack>

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BBC World News (London, UK)

## **Trump Tells Israel Iran Will Never Have Nuclear Weapons**

Author Not Attributed

May 22, 2017

US President Donald Trump has told Israel's Prime Minister, Benjamin Netanyahu, that Iran will never have nuclear weapons.

He suggested the Iranians thought they could "do what they want" since negotiating a nuclear deal with world powers in 2015.

Mr Trump arrived in Israel from Saudi Arabia, where he sought to win Arab states' support for fighting extremism.

He has called for a peace deal between Israel and the Palestinians.

However, he has been vague about what form it should take, saying he prefers to leave it to both sides to decide between them in direct talks.

The two-day visit to Israel forms part of Mr Trump's first foreign trip as US president.

What exactly did Trump say about Iran?

Speaking in Jerusalem, he said Iran had negotiated a "fantastic deal" with his predecessor, Barack Obama, winning "a lifeline and prosperity".

But "instead of saying thank you", the Iranians were backing terrorism, he said. In a speech earlier on Monday, he accused Iran of "deadly funding, training and equipping of terrorists and militias".

"Iran will never have nuclear weapons, that I can tell you," Mr Trump told Mr Netanyahu.

In a deal with world powers in 2015, Iran accepted curbs on its nuclear programme in return for tangible economic benefits, and the White House confirmed last month that the deal was still holding.

Iranian President Hassan Rouhani, who was re-elected for a second term last week, championed the 2015 deal but on Monday he appeared to sweep aside international concern about Iran's missile programme.

"The Iranian nation has decided to be powerful," he said on state TV. "Our missiles are for peace and for defence... American officials should know that whenever we need to technically test a missile, we will do so and will not wait for their permission."

Mr Rouhani also played down Mr Trump's strong criticism of Iran at a summit in Saudi Arabia at the weekend, saying: "Who can say regional stability can be restored without Iran?"

Even harder than Mid-East peace? Analysis by Siavash Ardalan, BBC Persian

Forging an anti-Iranian alliance between Israel and Saudi Arabia may prove an easier task for President Donald Trump than bringing peace between Israel and the Palestinians.

Having focused on a bitterly contested election, Iranian leaders are now at least ostensibly playing down the emerging threat from a new US administration that has virtually put Iran back in the "axis of evil" box.

President Rouhani described Mr Trump's massive arms deal with Saudi Arabia as having "no practical value" and Iranian Foreign Minister Javad Zarif questioned rhetorically whether the push by the Americans constituted a new foreign policy or just "milking Saudis" for hundreds of billions of dollars.

Even though any possibility of a military confrontation is not imminent, a tough US stance against Iran could make it much more difficult for the moderate Hassan Rouhani to do business with the outside world, and therefore deliver on his promise of a better economic future for the country.

Can Trump's trip bring peace any closer?

Speaking about the prospect of a peace deal between Israel and the Palestinians, Mr Trump said, "I've heard it's one of the toughest deals of all".

But he added that he had a "feeling that we're going to get there eventually".

President Trump believes he is the world's greatest dealmaker and making peace between Israelis and Palestinians after a century of conflict would be the world's biggest deal, writes Jeremy Bowen, the BBC Middle East editor.

During the US election, candidate Trump expressed views that seemed to fit neatly with those of the right-wing Israeli government of Mr Netanyahu - favouring expansion of Jewish settlements on occupied territory and a tough line towards Palestinian aspirations for independence.

But in office, President Trump has been more nuanced - so there has been some nervous speculation on the Israeli right that he might demand concessions from their side, our editor says.

But most people, on both sides of the argument, are deeply sceptical about the chances of any progress, no matter what President Trump says or does while he is here, our editor adds.

Israel and the Palestinians have not held direct talks in just over three years.

Mr Trump is due to meet Palestinian leader Mahmoud Abbas in Bethlehem on Tuesday.

Where did Trump go in Jerusalem?

Before meeting Mr Netanyahu, he visited the Church of the Holy Sepulchre where - site of Jesus's burial and resurrection, according to Christian tradition.

Then, wearing a Jewish skullcap as a mark of respect, he visited the Western Wall, one of the most sacred sites in Judaism.

The wall is a remnant from the time of the Second Jewish Temple, which stood on the plateau above it and was destroyed by the Romans in 70 AD.

Mr Trump could be seen placing what appeared to be a written note between its stones, as is the custom among visitors to leave notes with prayers and requests to God.

Have Trump's domestic troubles pursued him abroad?

The president's visit was overshadowed by political difficulties at home.

Speaking to Mr Netanyahu on Monday, he sought to dispel suggestions that he had passed on sensitive Israeli intelligence to Russian diplomats at a recent meeting, saying he had not mentioned the word "Israel" at the meeting.

Latest reports from the US say Mr Trump's former National Security Adviser, Michael Flynn, will refuse to give evidence to the Senate Intelligence Committee after being subpoenaed in connection with Moscow's possible involvement in last year's presidential election.

What's the next leg of President Trump's tour?

He will be in Rome to meet Pope Francis and Brussels to see Nato leaders.

On Friday, he will return to Italy for to meet other world leaders at a G7 summit in the Sicilian town of Taormina, where climate change is expected to be discussed.

<http://www.bbc.com/news/world-middle-east-39973197>

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Tehran Times (Tehran, Iran)

## **Trump Making Good on Nuclear Deal 'So Far': Top Iranian Diplomat**

Author Not Attributed

May 24, 2017

*A top Iranian diplomat said on Wednesday that U.S. President Donald Trump has "so far" honored his side of the international nuclear accord, one which he harshly berated as a presidential candidate.*

"So far, Trump has shown commitment to the nuclear deal," ISNA quoted Deputy Foreign Minister Abbas Araghchi as saying after a parliamentary briefing on the deal.

“Other non-nuclear sanctions need to be suspended at the right time,” the top nuclear negotiator added, noting, “As a matter of fact, it was Trump’s first test.”

Iran and six world powers, including the U.S., agreed in July 2015 to remove nuclear-related sanctions against Tehran in reward for it rolling back its nuclear program.

During his presidential trail, Trump threatened to pull out of the accord, at one point branding it a “disastrous deal”, contrary to his predecessor Barack Obama who had hailed it a signature foreign policy achievement.

Just two days before the May 19 elections in Iran, however, Trump extended the sanctions relief called for under the deal even as he imposed narrow penalties on two Iranian and Chinese figures for supporting Iran's ballistic missile program.

"The United States continues to waive sanctions as required to continue implementing U.S. sanctions-lifting commitments in the Joint Comprehensive Plan of Action," the State Department said in a statement, referring to the deal by its formal name.

Earlier in April, U.S. Secretary of State Rex Tillerson, in a letter to U.S. House of Representatives Speaker Paul Ryan, remarked that Iran had remained compliant with the deal yet he had urged launching an inter-agency review of whether the lifting of sanctions against Iran was in the United States' national security interests.

It would not be clear, however, if the review will influence Trump’s next decision in nearly two months from now, when he is to waive a different set of sanctions for a six-month period, according to Araghchi.

<http://www.tehrantimes.com/news/413749/Trump-making-good-on-nuclear-deal-so-far-top-Iranian-diplomat>

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The Diplomat (Tokyo, Japan)

### **A Holistic Approach to India's Nuclear Doctrine**

By Nishant Rajeev

May 24, 2017

*If India is considering a change to its nuclear doctrine, it will need to understand the non-military consequences.*

The Indian Armed Forces released a new war-fighting doctrine in April this year, called “The Joint Doctrine of the Indian Armed Forces 2017.” The doctrine underlines the need for enhanced capabilities in space and cyberspace as well as a special emphasis on conducting special operations along the lines of surgical strikes (like the one conducted in September 2016) to combat cross-border terrorism. However, there was one tenet of the new doctrine that may have been overlooked. It is the paragraph that refers to the defining issues of India’s Nuclear Command Authority. While it reiterated India’s commitment to a no first use policy, it also called for a need to maintain “credible deterrence” as opposed to the “credible minimum deterrence” envisioned by the draft nuclear doctrine. If this statement is truly indicative of a shift in India’s nuclear posture, it may have far greater implications than the strictly military standpoint.

Recently, there has been much speculation about a shift in India’s nuclear doctrine. In March this year, Vipin Narang, an associate professor at MIT, had, after a close reading of Shivshankar Menon’s

book, indicated that India might be inching toward a counter-force doctrine from its current counter-value-based doctrine. This assessment followed remarks a couple of months earlier by then-Defense Minister Manohar Parrikar, who said, “Why should I bind myself [to no first use]? I should say I am a responsible nuclear power and I will not use it [nuclear weapons] irresponsibly.” The recent omission of the word “minimum” from the nuclear posture, could be a clear indication of such a shift, as this document is the official doctrine of the Indian military.

Minimal deterrence is the status wherein a nation maintains the minimum number of nuclear weapons to inflict unacceptable damage on an adversary even after suffering a nuclear attack. The main logic driving minimal deterrence is not how large of a nuclear attack one’s own country can suffer, but rather how much the adversary is willing to suffer. Hence an arsenal of this size would be maintained to deter nuclear conflict mainly through the threat of retaliation or punishment. While this would certainly cap India’s arsenal size and keep such an arsenal “minimal,” it is important to note that the arsenal size would also depend on an adversary’s ability to carry out a so-called decapitating first strike. Even under credible minimum deterrence, there is always a need to ensure the survivability of one’s arsenal in order to keep the ability to carry out counter strikes. Hence there have been calls for keeping India’s nuclear arsenal open-ended so as to properly address future scenarios. In light of this argument, one must note recent technological developments such as MIRV technology, Pakistan’s Babur III submarine-launched missile, and growing concern over Pakistan’s expanding nuclear arsenal to achieve full-spectrum deterrence.

All this is likely to prey on the minds of policymakers and may even force them to drop the idea of maintaining a minimum force size. But does this indeed point to shift in India’s nuclear posture, from counter-value targeting to counter-force targeting? A counter-force doctrine would certainly require a greater force structure. Assuming that most Pakistani nuclear weapons are kept in hardened underground bunkers (and taking into account the inverse square law), accuracy would indeed have to be very high to adopt a credible first strike doctrine. The number of warheads required would depend directly on the accuracy of each individual warhead. As the reliability of Indian systems is not very high and their accuracy is quite questionable, India would require a very large force structure to ensure a credible counter-force doctrine. Hence the omission of “minimum” in the latest military doctrine may be truly be indicative of a shift in India’s doctrine.

While the recent developments in the neighborhood are of genuine concern, India’s nuclear posture cannot be seen in isolation — it has a direct bearing on both India’s economy and foreign policy. A minimum deterrent posture has the distinct advantage of avoiding large stockpiles of nuclear weapons, which can in turn lead to an arms race, imposing steep costs on a country that is barely able to find enough funds to procure modern weaponry for its conventional forces. By way of comparison, the U.S. nuclear program cost an estimated \$5.821 trillion from 1940-1996. Of this, only 7 percent was spent on building the bomb while 70 percent was spent on deploying, targeting, controlling, and defending against the bomb. The estimated cost for an Indian nuclear program is anywhere between \$2.5 billion to \$40 billion. To put this in perspective, India’s total defense allocation in the Union Budget was around \$53.5 billion for the fiscal year 2017-18.

However, the impact of a nuclear posture change on Indian foreign policy could be even worse. India has long been projecting itself as a responsible nuclear power and India’s current doctrine has a major role to play in this. It has helped India secure crucial international deals, such the Nuclear Supplier Group (NSG) waiver as part of the Indo-U.S. nuclear deal in 2008. More recently, India signed a nuclear cooperation agreement with Japan, which is quite surprising as Japan is known for its staunch anti-nuclear stance and India is not a signatory of the Non-Proliferation Treaty (NPT). India is currently also seeking to join the NSG as a permanent member; a doctrinal shift is only going to give China more reason to delay India’s entry. This posture would also play into the hands

of Pakistan, which has long accused India of duplicity over its no first use policy and called India's expanding arsenal a threat to the region's stability.

An assessment must be carried out as to whether India does indeed possess the capability to truly adopt a counter-force doctrine. If tall claims that are made can't be backed up by actions, this would only undermine Indian deterrence rather than enhance it.

Ever since the Pakistani establishment embraced tactical nuclear weapons, there has been a growing consensus that Islamabad has achieved escalation dominance. Possession of tactical nuclear weapons has given Pakistan the ability and freedom to conduct sub-conventional warfare without fear of escalation. A shift in India's nuclear doctrine may be part of an overall strategy to deal with the threat of sub-conventional conflict in a nuclear environment. The doctrine does predict that future wars will be ambiguous, uncertain, short, swift, lethal, intense, precise, non-linear, unrestricted, unpredictable, and hybrid. From a military standpoint, the adoption of a counter-force doctrine may be an attempt to create space for conventional operations by integrated battle groups. This is backed by the decision earlier this year to reduce the War Wastage Reserves to a level of only 10 days of intense fighting.

Hence while India is seeing the space for large-scale conventional wars receding, the Indian Army may be making a new push for limited conventional operations in a nuclear environment. But it will be crucial to understand what economic constraints and international fallout such a doctrinal shift will face. Hence the government must undertake a holistic approach to any change in India's nuclear posture, and not solely a military one.

<http://thediplomat.com/2017/05/a-holistic-approach-to-indias-nuclear-doctrine/>

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Pakistan Observer (Islamabad, Pakistan)

## **Lowering Nuclear Threshold**

By Zafar Jaspal

May 25, 2017

India-Pakistan strategic competition and Great Powers interest in the region have made the South Asian strategic environment complex and unpredictable. Today, the Great Powers have been engaging the South Asian leading states for the pursuit of their global strategic objectives. The Americans announcement of 'Pivot of Asia' or China's containment strategy in Asia-Pacific in 2001-2002, Russia's assertive military actions in Crimea, Ukraine in 2014 and Syria in 2015, and China's signaling to monitor and oppose the external interference in the South China Sea affairs have immense impact on the South Asian strategic environment. Nevertheless, the transformation in the global strategic environment alarms about the lowering of nuclear strategic environment in South Asia.

South Asian states, particularly India and Pakistan are equally enthusiastic for cooperation with the Great Powers to sustain their regional autonomy and purchase high-tech military hardware. Neither India nor Pakistan is advanced in military know-how. Therefore, both states are depended on the technologically advanced nations for military hardware purchases and relevant transfer of technologies. The alarming fact is the absence of arms control constituency in both India and Pakistan. Thus, both states continue manufacturing military hardware indigenously and purchasing weaponry from the technologically advanced nations.

Importantly, New Delhi permitted local private companies to work with foreign players to make high-tech defence equipment in India on May 20, 2017. Premier Narendra Modi government also announced to spend \$250 billion on the modernization of its armed forces over the next decade. Indeed, New Delhi armed forces modernization scheme is very attractive for the military industrial complex and thereby it is endeavouring to facilitate New Delhi to purchase military sophisticated hardware. Simultaneously, it is destabilizing for South Asian Strategic environment.

The Great Powers selectively transfer sophisticated technology to improve their allies' indigenous research and development military programs. The selective-cum-discriminatory approach about the transfer of technology is perilous for the regional strategic stability. It not only undermines the arms race stability but also subvert the conflict sustainability between/among the belligerent's neighbours. In theory, the discriminatory transfer of technology policy of the supplier nation in a nuclearised region, such as South Asia, certainly lowers nuclear threshold. Precisely, increases the chances of conventional war spiraling into nuclear exchanges or war.

Since the end of Cold War and subsequent shift in India's foreign policy in 1992, New Delhi has been receiving technological assistance from the developed world. New Delhi shunned its indigenous technological driven programs, especially indigenously military build-up programs for modernization of its armed forces. For instance it abandoned its indigenous ballistic and cruise missile program—Integrated Missile Development Programme of Defence Research and Development Organization of India. India's willingness to purchase military hardware from military technologically advanced nations makes it attractive for the American and European military industrial complexes. India is intelligently using its attractiveness for transfer of space technology for advancing of its ballistic missiles inventories.

The United States led western world not only expressed its willingness to sell military hardware to India but in certain cases they agreed to transfer the dual use technology to India, i.e. nuclear and missile. The American nuclear commercial lobby realized that India is a big market for its nuclear reactor industry. Similarly, the American space enclave decided to capture India's big space market. For uninterrupted transfer of material as well as technology to India, the Bush Administration amended US Foreign Assistance Act 1954. And also had facilitated, India in getting waiver from Nuclear Supplier Group in Sept 2008.

The United States strategic partnership with India is gradually creating military imbalance in the South Asia strategic environment. The transformation in military power entailing military asymmetry between the strategic competitors encourages the advantageous state to launch a preventive war against the adversary. Paradoxically, the Washington primary objective is to build India militarily to check the Chinese rise in Asia, while India is determined to advance its military muscle to establish its hegemony in South Asia.

New Delhi's hegemonic aspiration maybe acceptable to the smaller neighbours of India, but Pakistan is unwavering to sustain its sovereign stature in the international community particularly in South Asian strategic environment. Pakistan's endeavour to sustain the strategic equilibrium with its limited financial resources and indigenous nuclear weapons program certainly frustrate Indian ruling elite and strategic community. The frustration of the Indian ruling elite has been multiplied during the recent years. To conclude, India's ruling elite and military establishment irresponsible destabilizing claim about the conduct of strategic strikes in September 2016, did not spiral into lethal border conflict. Nevertheless, it alarms about the lowering of nuclear threshold between India and Pakistan.

<http://pakobserver.net/lowering-nuclear-threshold/>

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The News (Karachi, Pakistan)

## **Threat of Nuclear War Against Pakistan**

By Zahoor Marwat

May 23, 2017

Vipin Narang, a nuclear strategist from the Massachusetts Institute of Technology, recently warned a conference on nuclear policy hosted by the Carnegie think tank that there was increasing evidence that India, which declared its no-first use strike policy in 2003, could launch a pre-emptive first strike against Pakistan if it feared a nuclear attack was imminent.

This was in a marked reversal of its well-known no-first use policy, according to the leading nuclear strategist. "India's opening salvo may not be conventional strikes trying to pick off just Nasr batteries (launch vehicles for Pakistan's tactical battlefield nuclear warheads) in the theatre, but a full 'comprehensive counterforce strike' that attempts to completely disarm Pakistan of its nuclear weapons so that India does not have to engage in iterative tit-for-tat exchanges and expose its own cities to nuclear destruction," he said.

Narang cited from Menon's book "Choices: Inside the Making of Indian Foreign Policy" released in November 2016. "There is a potential gray area as to when India would use nuclear weapons first against another NWS (nuclear weapon state). Circumstances are conceivable in which India might find it useful to strike first, for instance, against an NWS that had declared it would certainly use its weapons, and if India were certain that adversary's launch was imminent."

In addition, recent reports in Indian and international media about Indian capacity to launch a disarming first strike have clearly indicated that the BJP led government of India under the Doval-Modi duo is becoming more jingoist with every passing day. It may be noted that India's nuclear doctrinal developments and employment strategies chiefly remain directed towards Pakistan.

On the other hand, Pakistan has acquired nuclear capability for the sole purpose of security and safeguarding her vital national interests, its territorial integrity and sovereignty and to ensure its security and survival against intense and major aggression. The programme works as a hedge against strategic threats to our security.

Experts believe that regional stability is much needed in South Asia as India touts its nuclear brinkmanship. This can only come through a strategic restraint regime, which would lead to escalation control.

India's test-firing of 450 km supersonic Brahmos cruise missile without notifying Pakistan has once again brought up the issue of avoiding an arms race in the region and to strive for strategic stability. Pakistan on March 16 this year once again reiterated its proposal for a Strategic Restraint Regime for South Asia, which has been more or less on the table since 1998.

The belligerent Indian stance and illogical and unreasonable defence build-up has long been highlighted by Pakistan. India remains the largest importer of defence equipment in the region and its hegemonic designs are endangering peace and security in the region and beyond. It pays lip-service to the objective of non-proliferation and gives morally deplorable false statements against its neighbours while relentlessly pursuing a conventional and strategic arms build-up.

The ongoing nuclear arms race initiated by the Indian hegemonic leadership, which has fundamental discomfort with nuclear weapons in Pakistan, does not augur well in the emerging geo-strategic realities whereby trends are shifting from geo-strategic to geo-economics domain. Pakistan wants to move on and improve its relationship with India in the entire spectrum of

international relations whereas India not only threatens Pakistan of massive nuclear retaliation but has also gone on a massive arms purchase spree.

In the absence of strategic restraint, the situation appears to be getting extremely complex and uncertain. Pakistan's proposal for a Strategic Restraint Regime for South Asia remains on the table.

<https://www.thenews.com.pk/print/206076-Threat-of-nuclear-war-against-Pakistan>

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Indian Express (New Delhi, India)

### **Pakistan to Turn to China to Offset Its Isolation: US Intelligence Chief**

Author Not Attributed

May 23, 2017

*"Pakistan is likely to turn to China to offset its isolation, empowering a relationship that will help Beijing to project influence in the Indian Ocean," said Daniel Coats, director of National Intelligence.*

Pakistan might turn to its "all-weather" ally China to offset its growing international isolation, India's rising status and deepening Indo-US ties, according to America's top intelligence official.

"Pakistan is concerned about its international isolation and sees its position through the prism of India's rising international status, including India's expanded foreign outreach and deepening ties to the US," Daniel Coats, director of National Intelligence, said.

"Pakistan is likely to turn to China to offset its isolation, empowering a relationship that will help Beijing to project influence in the Indian Ocean," Coats told members of the powerful Senate Armed Services Committee yesterday during a Congressional hearing on worldwide threats.

Chinese and Pakistani leaders describe their strong bilateral ties as "all weather" and Islamabad is a major customer of Chinese weapons, including fighter planes and submarines.

He also said that Pakistan has failed to curb militants and terrorists.

In his prepared testimony, Coats said Pakistan-based terrorist groups will present a sustained threat to the US interests in the region and continue to plan and conduct attacks in India and Afghanistan.

"The threat to the US and the West from Pakistan-based terrorist groups will be persistent but will diffuse. Plotting against the US homeland will be conducted on a more opportunistic basis or driven by individual members within these groups," he said.

Noting that Pakistan will probably be able to manage its internal security, he said anti-Pakistan groups are likely to focus more on soft targets.

"The groups we judge will pose the greatest threat to Pakistan's internal security include Tehrik-e Taliban Pakistan, Jamaat-ul-Ahrar, al-Qaeda in the Indian Subcontinent, ISIS-K, Lashkare Jhangvi, and Lashkar-e Jhangvi ai-Aiami," he said.

Coats said that the emerging China-Pakistan Economic Corridor (CPEC) will probably offer militants and terrorists additional targets.

Coats warned Senators that Pakistan's pursuit of tactical nuclear weapons potentially lowers the threshold for their use.

“Early deployment during a crisis of smaller, more mobile nuclear weapons would increase the amount of time that systems would be outside the relative security of a storage site, increasing the risk that a coordinated attack by non-state actors might succeed in capturing a complete nuclear weapon,” he said.

Coats said the relations between India and Pakistan became more tense following two major terrorist attacks in 2016 by militants crossing into India from Pakistan.

“They might deteriorate further in 2017, especially in the event of another high-profile terrorist attack in India that New Delhi attributes to originating in or receiving assistance from Pakistan,” he said.

“Islamabad’s failure to curb support to anti-India militants and New Delhi’s growing intolerance of this policy, coupled with a perceived lack of progress in Pakistan’s investigations into the January 2016 Pathankot cross-border attack, set the stage for a deterioration of bilateral relations in 2016,” he said.

Increasing numbers of firefights along the Line of Control (LoC), including the use of artillery and mortars, might exacerbate the risk of unintended escalation between these nuclear-armed neighbours, Coats said.

“Easing of heightened Indo-Pak tension, including negotiations to renew official dialogue, will probably hinge in 2017 on a sharp and sustained reduction of cross-border attacks by terrorist groups based in Pakistan and progress in the Pathankot investigation,” he said.

Last year, heavily-armed terrorists sneaked in from across the border and attacked the Pathankot Air Force Station in Punjab. The attack had claimed the lives of seven security personnel while four terrorists were killed.

<http://indianexpress.com/article/world/pakistan-to-turn-to-china-to-offset-its-isolation-us-intelligence-chief-4672362/>

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## COMMENTARY

DefenseOne (Washington, DC)

### **Hey, NATO, Let’s Move Those 50 US Thermonuclear Weapons Out of Turkey**

By Joe Cirincione

May 23, 2017

*Why risk it? Even if NATO wants the nukes in Europe, Erdogan’s unstable regime is 68 miles from Syria, the hottest conflict zone on earth.*

When President Donald Trump and other heads of state meet at this week’s NATO Summit it might be a good time to discuss the wisdom of keeping 50 U.S. thermonuclear weapons in Turkey, just 70 miles from Syria, the most intense combat zone on the planet.

Each of the B61 gravity bombs stored at Incirlik Air Base, 68 miles from the Syrian border have a maximum yield of 170 kilotons, or 10 times more powerful than the bomb dropped on Hiroshima. But these bombs also have a “dial-a-yield” capability that allows them to be set to explode at various levels, down to less than one kiloton of force. They are the vestige of the thousands of battlefield weapons once deployed by the United States and the Soviet Union to wage nuclear war in Europe. Almost all have been withdrawn from deployment except these at Incirlik and

approximately 100 other B-61's stored at NATO bases in Belgium, Italy, Germany, and the Netherlands.

However, unlike those airfields, there are no aircraft based in Turkey capable of carrying the American nuclear weapons stored there. In a crisis, planes would have to fly from other U.S. bases, assuming they could be freed from their other assigned conventional missions. The actual strategy for their use is hazy at best.

“Today, the symbolism of these bombs is far more important than their military utility,” says nuclear historian Eric Schlosser. “Missiles carrying nuclear warheads reach targets much faster, more reliably, and with much greater accuracy.” Rather, the case for keeping the weapons is the nuclear equivalent of the old phrase about the purpose of NATO, “to keep America in, Russia out and Germany down.” In this case, the bombs are there to demonstrate that America’s nukes are in, Russian nukes will be kept out, and German nukes are unnecessary.

Is this symbolism worth the risk? Warning signs are mounting about the security of the weapons as U.S.-Turkish relations deteriorate and the war in Syria intensifies.

Just last year, the United States temporarily lost access to Incirlik during the attempted coup against Turkish President Recep Erdogan. Senior Turkish officers in charge of the base were said to be among the leaders of the coup, and were accused of flying missions from the base in its support. Turkish forces loyal to Erdogan surrounded Incirlik and cut off power for days, effectively trapping some 2,500 U.S. servicemen stationed there — and the 50 nuclear weapons. A week later, the base was again under siege, surrounded this time by thousands of anti-American protesters who burned American flags and demanded the government close the base.

Erdogan’s rule since the coup attempt has grown increasingly authoritarian. His forces killed over 250 people during the uprising, wounded more than 1,400 and arrested almost 3,000. Since then he has purged more than 2,700 judges, detained nearly 50,000 people, including many soldiers, journalists, lawyers, police officers, academics, and Kurdish politicians, sacked 120,000 public servants and vowed to “clean all state institutions of the virus of Fethullah Gülen supporters” loyal to the cleric Erdogan claims was behind the coup.

As Elmira Bayrasli wrote in *Defense One*, Erdogan holds his own country “hostage for his political benefits.”

Even if you believe the United States should keep tactical nuclear weapons in Europe, is Turkey a safe place to do so?

Since the attempted coup, Turkish forces carried out airstrikes in Iraq and Syria against the Kurdistan Worker’s Party, who are armed by the United States to fight ISIS. If media reports are correct, former National Security Advisor Michael Flynn blocked a plan to use Kurdish forces to spearhead an attack on the ISIS capital of Raqqa, perhaps at the behest of Turkey.

Most recently, during Erdogan’s visit to Washington, his personal bodyguards punched, choked, and kicked peaceful demonstrators outside the Turkish Embassy. Astonishingly, Turkey’s Foreign Ministry on Monday summoned the U.S. ambassador in Ankara to lodge a formal protest over the alleged “aggressive actions” of U.S. police in protecting the demonstrators, further straining relations.

Meanwhile, U.S. combat operations in Syria are intensifying. U.S.-led forces last week fended off an attack by Iranian-affiliated militia fighters operating in Syria and, according to the Pentagon, ignoring even Russia’s request to stand down. The battle for Raqqa is now back on track, and the most violent fighting of the war could occur in the coming months. As ISIS faces elimination, might it’s fighters strike out across the border inside Turkey?

Can we be sure that America's nuclear bombs at Incirlik are secure? We cannot. There is growing concern that Incirlik is vulnerable to a terrorist attack. Last March, military families were evacuated from southern Turkey, mainly from Incirlik Air Base, as a result of security concerns from ISIS activity threatening the area. Major security upgrades to base are now underway, including around the vaults used to store the nuclear weapons. But new fences are not the answer. "The security risk of basing U.S. nuclear bombs in Europe," warns former NSC staffer Steve Andreasen and Isabelle Williams, "clearly demonstrate the case for consolidating U.S. nuclear weapons in the United States."

Why risk it? No member of NATO will doubt our resolve or the credibility of our nuclear assurances if we pull 50 dangerously exposed nuclear weapons from Turkey. They may actually breathe a sigh of relief.

<http://www.defenseone.com/ideas/2017/05/dear-nato-get-those-50-us-thermonuclear-weapons-out-turkey/138113/>

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The National Interest (Washington, DC)

### **The U.S. Military Needs "Second Strike Capability" in the Space and Cyber Arenas**

By Dave Majumdar

May 25, 2017

*Why risk it? Even if NATO wants the nukes in Europe, Erdogan's unstable regime is 68 miles from Syria, the hottest conflict zone on earth.*

The United States must develop some form of "second strike capability" in domains such as space or cyber to help deter aggression in those arenas. The development of ballistic missile submarines helped to slow down nuclear escalation during the Cold War. The development of some sort of equivalent capability for realms such as cyber or space might do the same for those domains too.

The high-end threats such as Russia and China are able to challenge the United States at the highest levels across nuclear, chemical and biological weapons, cyber, space and the conventional realms—which Adm. John Richardson, chief of naval operations [3], calls the five spices. Others are able to challenge the United States to varying degrees.

"The deterrent mix of the five spices must be carefully thought out," Richardson said, speaking at the Center for Strategic and International Studies on May 25 [4]. "It might be that a simple, you know, like-on-like approach is appropriate. But, you know, a more sophisticated approach would include the other modes, other dimensions of deterrence, perhaps responding through other means when required. It would be tailored to specific actors, but at the same time we've got to be mindful that the whole world is watching, and so it has to hold together across, you know, all situations. Other actors will be watching what we do to one."

Deterrence is becoming increasingly complex—but there might novel ways to respond to new challenges. But the lessons of the Cold War may still be applicable to these new challenges. Indeed, the development of the ballistic missile submarine [5] and the submarine launched ballistic missile might provide some inspiration to today's strategists.

"The one thing about the undersea leg was it gave you that second-strike capability, right, that guaranteed second strike, and that slowed things down a little bit," Richardson said. "You really had to think things through. It wasn't just sort of ICBM versus ICBM. That was sort of a high-bandwidth

structure, very, very quick decision-making possible. And so, as we think about deterrence, things that slow the process down a little bit, buy us time, seem to be beneficial. And so, you know, is there a way in some of these other dimensions to have something like the SSBN, a – you know, an assured second strike capability in space or an assured second-strike capability in cyber?”

The question, of course, is how would the United States build something that might do that—and that is the question the Navy is trying to answer. The answer could include new technologies, but exactly what is still an open question. “The Defense Department is tackling these challenges this summer in many ways,” Richardson said. The answers won’t come easily, but it is something the Pentagon must tackle head on.

<http://nationalinterest.org/blog/the-buzz/the-us-military-needs-second-strike-capability-the-space-20853>

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The Hill (Washington, DC)

### **Trump Administration Risks Reagan’s Legacy on Nuclear Disarmament**

By Matthew Bolton

May 24, 2017

*Why risk it? Even if NATO wants the nukes in Europe, Erdogan’s unstable regime is 68 miles from Syria, the hottest conflict zone on earth.*

“A nuclear war can never be won and must never be fought,” declared U.S. President Ronald Reagan, in a 1983 speech to the Japanese parliament. “I will not be deterred,” he said, receiving a standing ovation. “The United States will never walk away from the negotiating table. Peace is too important.”

With such perseverance, his administration successfully negotiated the Intermediate-Range Nuclear Forces Treaty (INF Treaty) in 1987, one of the most sweeping and successful nuclear disarmament measures of the Cold War.

Yet today, the United States has walked away from the table on nuclear weapons, and we risk being left behind as the rest of the world relegates these weapons — designed solely to kill civilians by the millions — to the past.

This Monday saw the release of the first draft of a United Nations treaty to ban nuclear weapons. The text proposes to stigmatize nuclear weapons, placing them in the same category of international law as other weapons of mass destruction (biological and chemical) or those that cause unacceptable harm (landmines and cluster munitions).

The draft treaty is based on a first round of talks in March this year in which more than 130 countries participated. If further negotiations in June and July result in the U.N. adopting a strong treaty, it would be the most significant development in nuclear politics since the end of the Cold War.

It’s a proposal grounded in the basic fact that nuclear weapons are 1940s technology, do not address the threats of the 21st Century, and create unacceptable moral and security risks. Unfortunately, the U.S. will not be part of this game-changing moment.

At the start of the March meeting, the Trump administration betrayed Reagan's commitment to "never walk away" from nuclear disarmament talks by refusing to participate. Instead, America's Ambassador to the U.N., Nikki Haley, stood outside the conference room and held a protest.

She invoked fears that North Korea would be "cheering" the nuclear ban treaty. But by refusing to even enter the room, the Ambassador Haley aligned herself with both North Korea and Russia, which are also not participating.

Rather than live up to the values America believes in, the U.S. gave them the excuse they wanted to skip the negotiations and continue their dangerous behavior.

Ambassador Haley paradoxically explained her protest as a way to "have our voices heard."

America is the supposed leader of the free world, a Permanent Member of the Security Council, and a guarantor of global security.

The U.S. should be inside the room leading the international community, not standing in the corridor and complaining.

The surest way to be heard is to show up – and we've done it before. The U.S. was a leader in efforts to ban biological and chemical weapons. We should play the same leadership role with nuclear weapons today. Instead, the Trump administration seems unwilling to lead or engage with other countries to make the world — including America — a safer place. US credibility as an actor capable of dealing with major global challenges is under threat.

But perhaps this is not a surprise. Trump has threatened to break with Republican and Democratic administrations' bipartisan commitment to disarmament. He has called for a new "arms race," to "greatly strengthen and expand" our nuclear stockpile, and seems determined to walk away from our legal commitment to seek a world free of nuclear weapons.

Global tension over the Korean Peninsula, a long history of accidents and close calls, and the fact that there's nothing to stop the U.S. president from starting a nuclear war in a fit of pique, mean that there are no safe hands for nuclear weapons.

As a result, like every other weapon of mass destruction, nuclear weapons must be subject to an international prohibition. And so it falls to Congress, advocacy groups, activists and faith leaders, who must refuse to let America walk away from a vital discussion about the future of our planet.

<http://thehill.com/blogs/pundits-blog/defense/334975-trump-administration-betrays-reagans-legacy-on-nuclear-disarmament>

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Atascadero News (Atascadero, CA)

## **Korean Conflict Presents An Emerging Threat To America**

By Al Fonzi

May 20, 2017

June 25th of this year will mark the 67th anniversary of the North Korean invasion of South Korea that resulted in a bloody three year conflict that killed over 50,000 Americans and about 2 million Koreans. Another war on the Korean Peninsula will result in many millions more killed on both sides and quite possibly involve for the first time since WWII, an attack on the American homeland. A nuclear strike on American territory is increasingly probable.

Today, the sound of war drums is increasing as North Korea obstinately refuses to comply with United Nations resolutions to halt their nuclear weapons and missile programs despite heavy sanctions. Last year the American Commander of Pacific military forces said that the imposition of sanctions to force the North Koreans to comply with UN sanctions is a failure, that the North is determined to develop an offensive nuclear weapons capability and only military force and regime change will halt the North's program. Over twenty years of negotiations, sanctions, bribes and bargaining by the United States and nations of the region has failed. The northern tyrant is single-minded in a relentless pursuit of weapons of mass destruction and continues putting most of their national budget into building ever-increasing offensive military capabilities, including nuclear weapons.

Since the armistice that halted fighting at the 38th Parallel in July 1953 but leaving a continued state of war along the Demilitarized Zone (DMZ), North Korea has presented only absolute hostility towards South Korea, the West and especially the United States. Most Americans are surprised to learn that firefights between North Korean combat patrols and U.S./South Korean forces enforcing the armistice in the DMZ still occur frequently. Over the years the North has deliberately initiated major incidents to provoke a crisis, such as the seizure of the USS Pueblo and its crew in January, 1968; shooting down an unarmed American Reconnaissance aircraft over international waters, killing all 31 Americans aboard in 1969 (my former squadron), butchering American officers on the International Bridge in 1977 and a host of other belligerent acts without let-up. The North assassinates high-level South Korean officials, periodically attacks South Korean military units and keeps 70 percent of its military on a hair-trigger alert, poised just an hour from the South Korean border.

The DMZ is the most heavily fortified border in the world with most of the North's 10,000 artillery systems aimed at Seoul, the South Korean Capitol and its 25 million civilian inhabitants, comprising roughly half of South Korea's population. The north has built underground airfields in the sides of mountains, constructed untold numbers of tunnels beneath the DMZ into the South to facilitate invasion and maintains an active army of over a million men with another 7 million in various states of readiness in its reserves. The north also maintains a massive stockpile of chemical and biological weapons, even though they've been outlawed by the UN for decades; the United States destroyed its stockpiles in the 1990s.

Western security analysts and military leaders dread a renewed conflict in Korea for all of the reasons stated above, hoping that sanctions, when combined with incentives, will soften the Northern leadership's stance and re-enter the international community without war. It's not to be. The current leader, Kim Jong Un, is worse than either his father or grandfather, utterly ruthless and willing to kill without hesitation, including half of his own people, kept in a state of perpetual starvation (blamed upon the West). They're indoctrinated 24-hours daily about the "Dear Leader's" exploits and efforts to serve his people. The North Koreans live in a national religious cult as much as a closed political system, tyrannical beyond the comprehension of most Americans.

Today we are faced with an emerging North Korean nuclear threat that will likely materialize by the end of this decade, making North Korean conquest of the South a near certainty with the ability of America to come to their aid uncertain. The long-range missile threat to America is real and will initially threaten Guam, Hawaii and the west coast of the American continent and eventually every major US city. Their weapons will deploy large, likely thermonuclear warheads due to questionable accuracy of their missiles. Our anti-ballistic missile systems are limited in quantity and capability due to intransience of Progressive, liberal politicians that have steadfastly put their faith in treaties with tyrants rather than a robust missile defense system. Progressives have also significantly drawn down our nuclear deterrent forces to a bare minimum based upon deterrence of a rational Soviet (Russian) or Chinese leadership.

While hatred of the current U.S. President dominates headlines, the real threat to our liberty, even national survival comes closer each day to deploying a capability to destroy our homeland and all the unfulfilled dreams of America's children.

<https://www.atascaderonews.com/article/opinion-korean-conflict-presents-an-emerging-threat-to-america>

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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.