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Featured Item

"NUCLEAR WEAPONS SUSTAINMENT: Budget Estimates Report Contains More Information than in Prior Fiscal Years, but Transparency Can Be Improved".

Written by Joe Kirschbaum and David Trimble, published by the US Government Accountability Office; July 20, 2017

What GAO Found

The fiscal year 2017 joint report submitted by the Department of Defense (DOD) and the Department of Energy (DOE) in August 2016 includes 10-year budget estimates for sustaining and modernizing U.S. nuclear weapons (see figure below), and these estimates are generally consistent with the two departments' internal funding and modernization plans—with some exceptions. GAO could not verify that DOD's nuclear command, control, and communications (NC3) estimates were fully consistent with its internal funding plans. GAO also identified concerns about the alignment of DOE's modernization funding needs with potential future budgets; GAO recently recommended in a separate report that DOE address these concerns.

The fiscal year 2017 joint report generally includes more information than the fiscal year 2016 joint report did, but it continues to omit explicit information about all assumptions and limitations in DOD's and DOE's methodologies and reasons for year-to-year programmatic changes in some estimates—information that could improve transparency for decision makers in Congress. For example, DOD's NC3 estimate methodology does not describe how it selects program elements, determines its weighted analysis ratios, or differentiates methodologies for some funding streams.. Read More.....

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US NUCLEAR WEAPONS

Oakridger (Oak Ridge, TN)

Fed Appropriations Act Approved; Includes Millions of Dollars For Y-12, ORNL, UPF

Author Not Attributed

July 24, 2017

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In a news release issued Thursday, U.S. Sen. Lamar Alexander, R-Tenn., said the Act spurs science and energy research, supercomputing, nuclear waste consolidation, maintains our nuclear weapons stockpile, and improves water infrastructure.

Highlights in the bill:

– The Uranium Processing Facility at the Y-12 National Security Complex is funded at \$663 million, which will continue to keep this project on time and on budget, with a completion year of 2025 at a cost no greater than \$6.5 billion.

The issue: The U.S. Senate Appropriations Committee approved the Energy and Water Development and Related Agencies Appropriations Act of 2018.

Local impact: It includes millions of dollars for projects in Tennessee.

– The bill also provides \$40 million for research and development to support existing nuclear reactors and \$24 million for the Center for Advanced Simulation of Light Water Reactors at the Oak Ridge National Laboratory.

– The bill advances efforts to clean up hazardous materials at Cold War-era sites. The bill provides \$6.6 billion to support cleanup efforts, which is \$126 million above the president's budget request. Included in this amount is \$518 million for cleanup at the East Tennessee Technology Park (K-25 Site), ORNL and Y-12.

– It also includes \$150 million for the Oak Ridge Leadership Computing Facility, an increase of \$40 million above last year.

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"This legislation approved today (Thursday) by the full Senate Appropriations Committee contains record levels of funding for the Army Corps of Engineers to improve our nation's water infrastructure, the Office of Science, which conducts basic science and energy research, and ARPA-E, which supports transformational, high-impact energy technologies," Alexander stated.

"We hope this bill can be one of the first appropriations bills considered by the full Senate this year," Alexander said.

Other highlights:

– The U.S Department of Energy's Office of Science is funded at \$5.55 billion, a record funding level in a regular appropriations bill.

- The bill includes a total of \$13.7 billion for the National Nuclear Security Administration, including \$1.7 billion to continue the four ongoing life extension programs, which fix or replace components in weapons systems to make sure they're safe and reliable.

 The legislation sends a strong signal about our support for developing new technologies that will support the next generation of nuclear power plants. The bill includes \$92 million for Advanced Reactors, which is \$28 million more than the president's budget request.

– The legislation includes a pilot program to allow consolidated nuclear waste storage, supported by Sens. Alexander and Feinstein, D-Calif. It also provides funding for DOE to support storing nuclear waste at private facilities.

- The bill provides \$1.49 billion for Advanced Scientific Computing and Research, including \$734.2 million within the National Nuclear Security Administration and \$763 million within the Office of Science. This amount includes \$381 million from the Office of Science and the NNSA to deliver at least one Exascale machine in 2021 to reassert U.S. leadership in this critical area.

– It also includes \$150 million for the Oak Ridge Leadership Computing Facility, an increase of \$40 million above last year.

The bill continues to support advanced manufacturing, and includes \$20 million for the Manufacturing Demonstration Facility to support the development of additive manufacturing processes, low-cost carbon fiber, and other advanced manufacturing technologies. It also includes \$14 million for the Institute for Advanced Composites Manufacturing Innovation.

– The Advanced Research Projects Agency – Energy (ARPA-E) is funded at \$330 million. ARPA-E was created by the 2007 America COMPETES Act to invest in high-impact energy technologies, and the President's budget request recommended termination of the program.

– The bill eliminates funding for the U.S. contribution to the International Thermonuclear Experimental Reactor (ITER) in France. This saves \$50 million.

– The bill also continues to fund regional commissions, which the administration proposed to eliminate, including \$142 million for the Appalachian Regional Commission and \$25 million for the Delta Regional Authority.

http://www.oakridger.com/news/20170724/fed-appropriations-act-approved-includes-millions-ofdollars-for-y-12-ornl-upf

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The Los Alamos Monitor (Los Alamos, NM)

Senate Committee OK's Funds For Key LANL Programs

By Tris DeRoma

July 24, 2017

The Senate Appropriations Committee approved legislation Tuesday that, if passed by the House and Senate intact this fall, would bring \$38.4 billion in funding to New Mexico – much of that going to the state's national laboratories.

The funds would also go to support the Waste Isolation Pilot Plant, the nuclear waste treatment plant in Carlsbad, and various federal water restoration projects within the state.

Los Alamos National Laboratory programs funded by the committee include the B61 nuclear weapon life extension program at \$788.5 million, \$200 million for plutonium pit manufacturing and \$161 million for the supercomputer development program.

Sandia and Los Alamos National laboratories are working on ways to extend the B61 program's life by at least 20 years.

Sandia is working on adding a guidance system to the tail and LANL's role is to update the weapon's other components.

The first completed B61 unit is due in March of 2020. The project's estimated cost is \$8.1 billion. The life extension program is being managed by the National Nuclear Safety Administration.

The appropriations committee also added millions in funding to help bolster the laboratory's aging infrastructure.

Included in the bill is \$180.9 million for the lab's Chemistry and Metallurgy Research Replacement project, which is expected to start in 2021 and be completed by 2024. The CMR facility supports the manufacture and refurbishment of the plutonium pits used in nuclear weaponry. The funds will go toward upgrading and replacing parts of the facility, which was built in the 1950s.

U.S. Sen. Tom Udall (D-NM), a member of the appropriations committee said the bill should also revitalize New Mexico's research and development sector.

"As a senior member of the Senate Appropriations Committee, I am proud to champion our national labs by fighting for the funding needed to keep these facilities strong," Udall said. "This bill makes critical investments in New Mexico's economy, including strengthening technology transfer. Tech transfer will energize New Mexico's private sector by harnessing the vanguard research and development being carried out at our national labs – helping turn researchers' ideas into vibrant, innovative businesses." Despite some well-publicized setbacks in the lab's plutonium pit manufacturing program, the bill also includes \$200 million to aid in the plutonium pit manufacturing process itself. Earlier this year, the Department of Energy announced it wanted LANL to increase its pit manufacturing process from the current three to four pits a year to 80 by 2027.

U.S. Sen. Martin Heinrich welcomed the news.

"LANL employs some of the best and brightest minds in the country and has been indispensable to our national security and global stability. I'm proud to work alongside Senator Udall to champion New Mexico's national labs and make sure they have the resources they need," Heinrich said.

The bill also promises \$20 million for the lab's waste treatment programs.

As for ongoing "legacy" waste cleanup efforts at the laboratory, the committee is proposing \$271.5 million for fiscal year 2018, a \$23.5 million dollar increase over this year's budget for the project.

Legacy waste includes all waste on the property that has collected at the site before 1979. The budget for the cleanup is being handled through the DOE's Los Alamos field office of the Environmental Management.

EM officials contacted at the Los Alamos field office said they could not comment on proposed budget legislation, that they were only allowed to comment on officially adopted legislation.

http://www.lamonitor.com/content/senate-committee-ok%E2%80%99s-funds-key-lanl-programs

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Washington Technology (McLean, VA)

NNSA Preps to Compete Potential \$36B Los Alamos Lab Management Contract

By Ross Wilkers

July 17, 2017

The National Nuclear Security Administration is getting ready to compete an estimated \$36.6 billion contract in search of a new manager of the Los Alamos National Laboratory.

NNSA posted a draft request for proposals July 12 with a response deadline of July 26. Deltek data indicates an anticipated solicitation release date of September this year with an award to follow in June 2018 and the current contract expires three months later.

Los Alamos National Laboratory is one of three designated national laboratories in the U.S. that holds responsibility over the U.S. nuclear weapon stockpile's state and health.

Joint venture Los Alamos National Security LLC has held the incumbent contract since 2006 but is losing the work after successive poor ratings on their performance evaluation, the Albuquerque Journal reported in September 2015. This is the second time the contract is being competed since LANL's creation during World War II to create the atomic bomb.

LANS members are Babcock and Wilcox, Bechtel, URS Corp. and the University of California. NNSA has spent approximately \$26 billion on the contract since its December 2005 award date at close to \$2 billion per year not including fees for performance.

A selected vendor for the recompete will be responsible for all aspects of the laboratory's management and operations and work to help LANL carry out its leadership role over the country's nuclear weapons complex supply chain, the draft RFP says.

The new draft RFP comes nearly two months after a Honeywell subsidiary took over the management and operations of Sandia National Laboratories. National Technology and Engineering Solutions of Sandia beat out Lockheed Martin's Sandia Corp. subsidiary for the potential 10-year, \$12.7 billion SNL management contract in December 2016.

SNL is responsible for the development, engineering and testing of non-nuclear components of nuclear weapons.

Lawrence Livermore National Laboratory is the country's third national lab and the contractor team responsible for that facility is a joint venture of Babcock and Wilcox, Battelle, Bechtel, URS Corp. and the University of California.

https://washingtontechnology.com/articles/2017/07/17/nnsa-los-alamos-contract-prep.aspx

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Breaking Defense (New York, NY)

Hyten Outlines STRATCOM Overhaul; Nukes Sooner For F-35?

By Colin Clark

July 26, 2017

Strategic Command chief Gen. John Hyten today confirmed, more than two months after news first broke of a shift, that he's ordered a series of sweeping changes at STRATCOM.

Basically, he got rid of the Joint Functional Component Commands for space, global strike, cyber, integrated missile defense, intelligence, surveillance and reconnaissance and whittled them down to one for space, one for air, one for maritime and one for missile defense. (Actually, Congress got rid of one component for him by making Cyber Command independent). They are also now called Joint Force Component Commands, so we've got the same acronym but a different name. That will drive people mad until Hyten, with his crystal clear mind, realizes they must be changed.

In addition to the JFCCs, Hyten abolished the six nuclear task forces that were responsible for airborne tankers, Atlantic and Pacific nuclear missile submarines, strategic communications, bombers and reconnaissance aircraft, and land-based ICBMs. Instead, they are grouped, logically, within the four commanders now responsible to him.

The biggest command change involves Gen. Jay Raymond, the head of Air Force Space Command. As Breaking D readers know, he will get a fourth star and become the space JFCC.

The current setup has the Joint Functional Component Commander, Lt. Gen. David Buck, reporting to the head of Strategic Command, Gen. Hyten. This is how STRATCOM serves as the combatant commander for space. Gen. Raymond sets the requirements for new space weapons, oversees Space and Missile Systems Command (which actually buys the satellites, sensors, launch and ground systems) and trains, equips and builds the space warfighting cadre. Once the changes are complete, which Hyten said probably won't be until early next spring, Gen. Raymond will directly advise Hyten on space forces and keep doing the space command job.

Similarly, Gen. Robin Rand, commander of Air Force Global Strike Command at Barksdale Air Force Base, will now serve as JFCC to Hyten for all things relevant to the E-4B flying command posts, B-2 and future Bp21 bombers, and KC-135, KC-10 and KC-46 tankers.

Adm. Phil Davidson of Fleet Forces Command will now be responsible for all nuclear subs.

Interestingly, missile defense remains a Joint Functional Component Command (not a Joint Force Component COmmand). I asked several people what this meant and didn't get a really clear answer.

All this will be watched very closely by both our allies and our competitors because of the centrality of nuclear forces to both deterrence and assurance.

In related news, Hyten told me that the he met two weeks ago with the head of European Command, Gen. Curtis Scaparotti, and discussed whether F-35A Joint Strike Fighters needed to be upgraded to carry nuclear weapons with all possible speed. He said they did not come to a decision, but reading his body language and careful wording, I'm betting they concluded this was a necessary step to take in the face of Vladimir Putin's continuing aggression across Russia's border with central Europe. Any move to make the F-35A nuclear capable will require, he said, close consultation with our NATO allies.

The presumptive undersecretary of defense for policy, David Trachtenberg, endorsed making the F-35A nuclear capable ASAP in his testimony before the Senate Armed Services Committee.

http://breakingdefense.com/2017/07/hyten-outlines-stratcom-overhaul-nukes-sooner-for-f-35/ Return to Top

US COUNTER-WMD

Scout Warrior (Minnetonka, MN)

Next US ICBM Intercept to Use New Technology

By Kris Osborn

July 24, 2017

Northrop Grumman is working with the Missile Defense Agency to refine new command and control systems able to exchange time-sensitive information with an interceptor kill vehicle.

The Pentagon's next intercept test will incorporate new missile defense technology engineered to improve the likelihood that a Ground-Base Interceptor can succeed in destroying an approaching ICBM nuclear weapons attack.

Northrop Grumman is working with the Missile Defense Agency to refine new command and control systems able to exchange time-sensitive information with an interceptor kill vehicle to improve its ability to guide toward an attacking enemy ICBM.

The technology, which involves the integration of new components into data terminals and communications networks, is designed to increase reliability of the Pentagon's Ground-Based Midcourse Defense (GMD) system and expedite the process through which sensors and data locate ICBM targets, Mark Thornton, Director of Missile Defense Systems Operating Unit, Northrop Grumman, told Scout Warrior in an interview.

While a Ground-Based Interceptor (GBI) travels into space to discern and destroy an ICBM, sensors and communications technology are needed to connect with the interceptor prior to engagement. While many of the details, sensors or RF technologies involved are, not surprisingly, unavailable for public discussion, there are a number of substantial cutting-edge improvements emerging quickly.

"We are replacing the GMD coms network with upgrades and a compressed footprint. We are making changes rapidly to put new devices into the network," Thornton explained.

Command and control upgrades to missile defense technology continue to emerge as a key priority in budget and spending deliberations, according to many senior Pentagon leaders.

Given the North Korea threat, missile defense upgrades are progressing at a crucial time for the Pentagon's Ground-Based midcourse defense. Following the completion of current Pentagon review of nuclear weapons, policy and defenses, there is a distinct possibility that funding for missile defense technology will continue to climb.

In a recent appearance before the House Armed Services Committee, Defense Secretary Jim Mattis said additional decisions about prioritized missile defense spending will be made at the conclusion of the ongoing strategy review.

Also testifying before HASC, Missile Defense Agency Commander Vice. Am. J.D. Syring specified that large portions of the more than a proposed \$7.9 billion 2018 MDA budget would be to support "integration of interceptors, sensors and the command, control, battle management and communications system" for missile defense.

As the industry deputy program manager for the GMD effort, Northrop is responsible for firecontrol systems, command launch technology, command and control networks and a wide range of computer technology responsible for the launch of an interceptor.

Northrop is teamed with Raytheon, which makes the Exo-atmospheric kill vehicle and Boeing, which engineers the Ground-Based Interceptor.

Reducing the hardware footprint and accelerating processing speeds of GMD command and control systems is a key element of these upgrades. In total, modern computing technology has enabled Northrop engineers to compress nine racks of servers into a single rack.

"You can do a lot more in a single box these days than you could do in a single system. There is more processing power and capability in smaller packages than when we built the system years ago. The machines that run the core of our system were the size of a refrigerator," Thornton said.

Having fewer hardware components on a GMD system - achieved through compression, smaller computing and data consolidation – is fundamental to improving the reliability of a Ground-Based Interceptor as it ignites and is guided into space.

Northrop engineers are in the process conducting a wide range of simulation exercises and ground tests to prepare the new components for an upcoming MDA intercept test.

The precise timing of the next test is not yet specified, however it is likely to be of great significance given that a Pentagon GBI succeeded in destroying an incoming ICBM target in space for the first time – just within the last few months.

http://scout.com/military/warrior/Article/The-Pentagons-Next-ICBM-Intercept-Test-Will-New-Command-and-Cont-103103049

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Chemistry World (Cambridge, UK)

US to Clean-Up Race Test Chemical Weapon Relics On Panama Island

By Rebecca Trager

July 26, 2017

Legacy mustard gas weapons from second world war will be disposed of in September

The US government has agreed to destroy chemical weapons that were left on Panama's San José Island after a US race-based test programme during the second world war. The eight chemical

bombs, which mostly contain mustard gas, were discovered on the island in 2002 and will be disposed of in September, according to the Canadian National Post.

During the second world war, the US spearheaded an initiative with Canada on San José Island to investigate chemical warfare munitions under tropical conditions. As part of this, the US Chemical Warfare Service compared the physical responses of Puerto Ricans and Caucasian Americans to mustard gas, explains University of Alberta medical historian Susan Smith. 'Scientists were trying to understand the impact of mustard gas on people,' she tells Chemistry World. 'They thought there was a possibility that some racial groups are less sensitive to mustard gas – it turned out not at all to be true.' Smith says the military testing involved, among other things, the aerial release of mustard gas over soldiers via airplane in order to later examine and compare their blisters or other injuries.

Disposing of the eight weapons in question will require between six and eight weeks, the National Post states, citing Panamanian officials. The paper says Canada is not participating in the clean-up of the weapons, and Smith suggests that this might be because the old chemical testing programme is seen as a US-led operation in which Canada was the junior partner.

In terms of the actual clean-up of this chemical weaponry, Smith says the US government can incinerate them or use other chemicals to neutralise the weapons. However, she suspects that these bombs will need to be transported to appropriate facilities in the US for disposal. 'Any unexploded ordinance is dangerous, and with a toxic agent like mustard gas you have to be especially careful,' Smith warns. 'You'd have to have your gear on.'

Farhad Vladi, who owns the company that has been tasked with selling San José Island, confirms that the US has agreed to dispose of the old chemical weapons. 'In order to sell the island, it is definitely necessary to have the bombs removed, otherwise there is a cancer risk,' he tells Chemistry World. The US National Toxicology Program has identified mustard gas as a known human carcinogen.

https://www.chemistryworld.com/news/us-to-clean-up-race-test-chemical-weapon-relics-on-panama-island/3007758.article

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The Washington Post (Washington, DC)

Why a Biodefense Firm is Going On a Spending Spree

By Aaron Gregg and Alex Schiffer

July 21, 2017

Emergent Biosolutions, a Maryland-based government contractor that helps maintain the U.S. stockpile of infectious disease vaccines, has been doling out a lot of cash this week as it continues to expand its drug portfolio.

Five days after the company agreed to pay \$97.5 million to acquire the smallpox vaccine assets of pharmaceutical giant Sanofi it handed another \$96 million to GlaxoSmithKline, one of biggest healthcare providers in the world, to acquire raxibacumab, an antibody that treats a form of anthrax that can be inhaled.

Both deals are part of a broader expansion plan that Emergent's executives hope will turn it into a \$1 billion-a-year company by 2020.

For its latest acquisitions, Emergent has mainly targeted what could be highly contagious biological threats, ones that can lead to high mortality rates and can disrupt society, said Adam Havey, Emergent's executive vice president of business operations.

As the company continues to look for business opportunities to help with its expansion plan, Havey said more deals could come soon.

"We're still very acquisitive," he said. "We're definitely not done. We have active deals in our pipeline. That's not going to stop or slow down."

Emergent is publicly traded company that is perhaps best known as the supplier of BioThrax, which is the only anthrax vaccine licensed by the Food and Drug Administration. The company also has products that tackle other biological agents and devices that protect against chemical threats. Recently the company's facility in Baltimore was named one of the nation's three Centers for Innovation and Advanced Development. The company employs approximately 1,200 people with more than 500 located in Gaithersburg, Baltimore and the District.

For the first quarter of the 2017 fiscal year, the company reported \$116.9 million in revenue, a 13 percent increase from 2016.

The company's executives are seeking to capitalize on anxieties about biological warfare and the spread of infectious disease internationally.

"There is a concern that there are stashes of smallpox throughout the globe and people aren't aware of where they all might be," said Emergent Chief Executive Daniel Abdun-Nabi.

Beyond biological warfare, Abdun-Nabi said there is also growing concern about climate change, and worries that the warming of the globe could open up new ways for diseases to spread.

"There's a real worry starting to grow across the globe about the re-emergence of pathogens that we might not have seen for a number of years," he said.

Abdun-Nabi's firm has been talking to foreign governments looking to update their vaccine stockpiles, and to new customers hoping to build one for the first time.

The acquisition from Sanofi buys the firm the rights to the only smallpox vaccine licensed by the FDA that is still actively produced.

It also buys them into a 10-year, \$425 million contract with the Centers for Disease Control, which coordinates the U.S. government's biodefense initiatives. The contract lapses next year, but the company says it plans to try and negotiate a follow-on contract.

With its second deal, Emergent plans to complete raxibacumbab deliveries to the U.S. Strategic National Stockpile by the end of 2019, under the current contract with the Biomedical Advanced Research and Development Authority. The deal is valued up to approximately \$130 million.

Emergent wants to transfer all manufacturing related to the anthrax antibody to its Baltimore facilities in 2020, according to a company press release.

Beyond the recent deals, Havey said the company is mainly looking into products that can be used for treatment in chemical, biological, radiological, nuclear and explosives. He said the company is currently looking into forms of wound treatment that stem from explosives as a possible purchase for the near future.

https://www.washingtonpost.com/news/capital-business/wp/2017/07/21/why-a-biodefensefirm-is-going-on-a-spending-spree/?utm_term=.ddb5431237cb

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Lawrence Berkeley National Laboratory (Berkeley, CA)

Report: Compact, Precise Beam Could Aid in Nuclear Security

By Glenn Roberts Jr

July 18, 2017

Berkeley Lab-led report highlights technique for detecting, identifying nuclear materials

A new, compact technique for producing beams of high-energy photons (particles of light) with precisely controlled energy and direction could "see" through thick steel and concrete to more easily detect and identify concealed or smuggled nuclear materials, according to a report led by researchers at the Department of Energy's Lawrence Berkeley National Laboratory (Berkeley Lab).

These photons are similar to X-rays but have even higher photon energy than conventional X-rays, which lets them penetrate thick materials.

Past techniques have had broad spreads in energy and angle that limited their effectiveness. New developments could bring the capabilities of highly precise, building-sized facilities to room-sized or mobile platforms that enable a range of high-priority nuclear nonproliferation and security uses.

This precision can simultaneously increase resolution while producing a lower radiation dose for many uses in and beyond nuclear security, such as:

- Detecting contraband or explosives.
- Verifying the contents of casks that store spent nuclear reactor fuel.
- Monitoring nuclear treaty compliance.
- Detecting a concealed nuclear device.
- Characterizing hazards after a nuclear accident.
- Industrial quality control and potentially medical X-rays.

"This report is focused on what type of source is needed to have the biggest impact rather than what has been developed to date," said John Valentine, Berkeley Lab's program manager for National & Homeland Security. "It lays out the roadmap to realizing applications." The report was prepared for the National Nuclear Security Administration (NNSA), a DOE agency responsible for national security-focused applications of nuclear science.

"One major application for this type of technology is the detection of concealed nuclear material – for example, hidden in cargo containers or a vehicle – but it has broad use for detecting other types of contraband," said Cameron Geddes, a staff scientist in the Lab's Berkeley Laboratory Laser Accelerator (BELLA) Center. Geddes led the preparation of the report with Bernhard Ludewigt, a staff scientist in the Lab's Fusion Science and Ion Beam Technology Group, part of the Accelerator Technology and Applied Physics (ATAP) Division.

Geddes and Ludewigt worked with a team of scientists from Pacific Northwest, Idaho, and Lawrence Livermore national labs, as well as the University of Michigan, to conduct detailed simulations that showed the improved capabilities that the new techniques would make possible.

"Existing technologies commonly use so-called 'Bremsstrahlung' sources to detect and identify nuclear materials," said Ludewigt. This kind of radiation source is not tightly directed and delivers a fan-shaped spread over a broad energy range of radiation. Those characteristics can limit imaging capabilities and require higher doses of radiation.

Known as a "monoenergetic photon source," the new technology would have a tightly collimated beam – meaning its photons would travel nearly parallel to one another in a narrow path. Those

photons would also have a narrow and precisely tunable energy range. These properties would reduce the radiation output needed during scans compared to other technologies in use today. They would also reduce the effect of undesired signals, such as noise from scattered photons, that can interfere with the detection of nuclear materials.

When scanning for hidden nuclear materials, Ludewigt said, "You don't want to have to open up every container that has something dense in it." The ability to quickly scan large objects, such as cargo containers, is also key, as millions of cargo containers pour into the U.S. every year.

The scanning technique's beam must also be safe for humans who may inadvertently come into contact with it, Geddes added. "That means we need to perform detection with high specificity while keeping dose low, so that if someone is hiding in the cargo container the scan won't hurt them," he said.

Simulations show, for example, that scanning at two separate ranges of energy would enable operators to identify the general type of materials that are present. If an object is discovered in this initial scan that is so thick or dense that it requires a more deeply penetrating scan to explore its contents, then by tuning the energy to specific values the same photon source could be used to identify whether an item is nuclear material.

With very tight control over the beam energy, the new source could also identify the exact element – including isotopes of elements, which have a different atomic weight and can be important in gauging nuclear security threats.

This diagram shows how a high-energy photon beam penetrates inside an unknown object (cube) to detect highly enriched uranium. (Credit: Berkeley Lab, Idaho National Laboratory)The report also notes that the beam's reduced radiation dose and increased specificity in materials detection could have a strong impact in other fields that use high-energy photons, including medical and industrial uses. Such a source would, for example, improve nondestructive industrial analysis – the ability to look inside machinery without the need for disassembly.

While building-sized particle accelerators have long been able to make precise, monoenergetic photon beams, new technology could shrink these systems, making them more affordable and compact to enable broad use.

"Instead of bringing the applications to the machine, we hope to bring the machine to the applications, whether that means scanning cargo, verifying treaty compliance, or many other uses," said Wim Leemans, director of the Berkeley Lab Laser Accelerator (BELLA) Center and the Lab's ATAP Division.

Berkeley Lab is among the leaders in the worldwide effort to develop new, compact acceleration technologies at its BELLA Center. BELLA uses lasers to generate a superhot state of matter known as a plasma, and to generate bunches of electrons and rapidly accelerate them to high energies over a very short distance.

Experiments have already shown that BELLA's plasma-based accelerators can produce the types of electron beams needed to realize a controlled high-energy photon beam that would meet the requirements described in the report.

Geddes is leading a separate BELLA Center project to demonstrate a compact monoenergetic source. The beams would be generated by scattering of a separate laser beam off of the high-energy electron beam from a plasma accelerator to produce pulsed photon beams with a narrow range of energies and controlled angles, a process called Thomson scattering. The new report details how such beams could improve the identification and imaging quality of nuclear materials.

"We are testing new technologies that can reduce the massive scales and costs of next-generation accelerators, enabling us to explore new realms of physics," Leemans said. These include nexttwitter.com/USAF_CUWS | cuws.au.af.mil // 14 generation high-energy particle colliders, and free-electron lasers that produce the world's brightest X-rays. All of these demand faster pulsing rates for the lasers that drive the new sources, and R&D is also underway toward pulse rates that would enable the techniques outlined in the report.

This work is supported by the Office of Defense Nuclear Nonproliferation Research and Development in the Department of Energy's National Nuclear Security Administration.

http://newscenter.lbl.gov/2017/07/18/compact-energy-beam-nuclear-security/

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US ARMS CONTROL

Arms Control Wonk (Washington, DC)

Deterrence Stability Is a Hoax. The Delicate Balance of Terror Is, Too.

By Michael Krepon

July 19, 2017

Can we hold two contrary notions in our heads at the same time? Can we acknowledge that the delicate balance of terror and deterrence stability are both hoaxes? Sure, deterrence stability works for mid-sized nuclear-armed states like Great Britain and France, which have no beef with each other and have limited financial means. They have counterforce capabilities but they aren't pursuing damage limitation strategies toward Moscow and Beijing. Instead, they have opted for survivability and assured destruction. British and French strategic analysts don't jump through hoops at the latest Russian or Chinese (or North Korean) missile flight-test.

The same cannot be said for nuclear-armed states that seek advantage in the event deterrence fails or even to escape deterrence altogether by means of counterforce capabilities. Under these circumstances, counterforce capabilities are destabilizing; they raise anxieties, rather than diminishing them. Washington and Moscow drank this Kool-Aid in the 1970s and have been addicted ever since. Strategic arms reduction treaties have reduced force levels, but counterforce targeting remains king. No matter how much these capabilities are refined, there's nothing delicate about crossing the nuclear threshold, regardless of yield and weapon effects. Escalation control will remain a cosmic roll of the dice. Nonetheless, true believers in the political and military utility of nuclear weapons remain hooked. They seek one-upsmanship, or at least to offset troubling moves.

There was a blessed lull in this competition at the end of the Cold War, which lasted until the Russian Federation revived from losing its empire and recovered from a great depression. Now Moscow and Washington are back to business as usual. As long as operational warheads with counterforce capabilities can cover targets, neither competitor feels comfortable—even in the absence of national missile defenses. The founding fathers of arms control—a high-powered group of defense intellectuals immersed in cost-effectiveness equations, IR theorists, scientists conflicted by their association with the Manhattan Project, and the Kennedy Administration's brain trust—conceptualized a state of deterrence stability ensured by vulnerability. Deterrence stability would help define and sustain a mid-point alternative between disarmament and arms racing. They didn't reckon adequately with the counterforce compulsion and damage limitation targeting strategies which negated the concept of deterrence stability, even in the absence of national missile defenses. For true believers in counterforce capabilities, deterrence works best when you have some sort of advantage. Advantages come in handy if deterrence fails.

Arms controllers reached the apogee of their influence in the Pentagon during Robert McNamara's tenure as Secretary of Defense who, along with his "whiz kids," forced the Air Force to pare back absurd plans for building intercontinental ballistic missiles. McNamara also took issue with national ballistic missile defenses, but this was an alien concept to the Kremlin. President Nixon and Henry Kissinger were no fans of strict BMD limits either, but they bowed to the realities of domestic politics, high costs, and technological constraints. When the construct of deterrence stability was then imperfectly put into practice in the first Strategic Arms Limitation accords, it satisfied no one. Hawks chafed at the Anti-Ballistic Missile Treaty, and Doves railed against an Interim Agreement that let MIRVs run free.

The ABM Treaty was the most remarkable achievement of the conceptualizers of arms control, but it didn't prevent an intensified nuclear competition, nor assure deterrence stability. The revolution of counterforce capabilities proceeded apace, with no regard whatsoever for the ABM Treaty. After McNamara's departure, men like Melvin Laird and James Schlesinger took the reins. Those who championed deterrence stability did not make decisions on new weapon systems, counterforce requirements, and targeting plans. Arms controllers didn't fare much better in the Pentagon during Democratic administrations. Rising counterforce capabilities made a hash of deterrence stability even though their practical effect was to clarify that there was nothing delicate about the balance of terror.

The best that could be said about the ABM Treaty in the first quarter-century of its existence was that the offensive competition would have been even worse in its absence. The ABM Treaty finally served its intended purpose of enabling and backstopping deep cuts when two disbelievers in nuclear orthodoxy, Gorbachev and Reagan, decided to pursue them. When President George W. Bush decided to cast the Treaty aside as an impediment to the sole superpower's freedom of action, he also made deep cuts in force structure unlikely.

Deterrence stability is a sensible and wise concept. It is achievable when decision makers in competing states are not in thrall to nuclear weapons. But it is a hollow incantation for competitors wedded to counterforce targeting to limit damage in the event of a nuclear war. Deterrence stability is anathema to those who seek advantage or, better yet, to escape from deterrence. Deterrence stability is also of no use to those who exploit instability for the prospect of gain or self-defense in a deep crisis.

Arms controllers deserve credit for the conception of deterrence stability, but not blame for its failure. The IR theorists, academics, and strategists who conceived of deterrence stability—and the companion constructs of strategic stability, arms race stability, and crisis stability—had only fleeting, or at best, peripheral influence on U.S. choices relating to offensive nuclear capabilities. In Washington and Moscow, these choices remain controlled by true believers in the political and military utility of nuclear weapons. If Beijing and New Delhi, which are now on the cusp of the counterforce compulsion, follow down this beaten path, they will have learned nothing from Washington and Moscow.

The aspirational constructs of deterrence stability, strategic stability, arms-race stability, and crisis stability remain in our lexicon because they continue to make sense in the abstract, and because arms controllers rightly remain wedded to them. They offer far preferable alternatives to the twin assumptions of escalation dominance and escalation control that are embedded in the embrace of counterforce capabilities and damage limitation targeting strategies. True believers in nuclear orthodoxy dare not lend clarity to their preferred abstractions; to do so would prompt revulsion by those on whose behalf a nuclear war would be fought. Instead, every modernization program and every refinement in offensive nuclear capabilities is defended generically in terms of deterrence, which sounds reasonable enough.

As nuclear dangers and dangerous military practices grow in several regions at once, the concepts of deterrence stability, strategic stability, arms race stability, and crisis stability remain extremely relevant. But these abstractions are not organizing principles. This terminology, conceived by eggheads—God bless them—does not connect with the general public. Nor do these constructs inform the procurement decisions of those who remain in thrall to the Bomb's powers.

Arms control has been a process whose achievements have been widely taken for granted. Diplomacy accomplished what deterrence alone could not – to keep the Cold War from becoming hot while capping and then reducing strategic forces. Those who denigrate diplomacy have systematically set out to demolish the accomplishments of arms control, and they aren't done yet. Their proposed remedies to reduce nuclear dangers consist of strategic modernization programs, which cost a great deal, and U.S. freedom of action to deal with proliferators, including the prosecution of wars of choice, which cost even more.

Nuclear dangers are now outpacing the ranks of those committed to their reduction. We owe much to those who laid the foundation for the practice of arms control at the outset of the Kennedy administration, but we can longer rely on their intellectual capital. One of the many challenges facing arms controllers—aside from figuring out what we now call ourselves—is to craft new terms of debate and new imagery to build popular support for our work. I'm not convinced that nuclear abolition is a banner that will take us very far and very fast. A process of nuclear arms reductions can, but it is stymied by Republican opposition and by poor relations between nuclear-armed states. Besides, this scope is too narrow, leaving many kinds of nuclear dangers unaddressed. What I do know is that progress in reducing nuclear dangers will require demystifying the counterforce compulsion and clarifying its hidden assumptions.

http://www.armscontrolwonk.com/archive/1203633/deterrence-stability-is-a-hoax-the-delicate-balance-of-terror-is-too/

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The Washington Free Beacon (Washington, DC)

Intelligence Report Warns of Growing Missile Threats

By Bull Gertz

July 13, 2017

China, Russia, Iran, North Korea building up missile forces to threaten U.S. homeland and allies

The United States faces a growing threat of ballistic and cruise missiles from China, Russia, Iran, and North Korea, according to a military intelligence report.

"Ballistic and cruise missiles present a significant threat to U.S. and allied forces overseas, and to the United States and its territories," states the latest report by the National Air and Space Intelligence Center in Ohio.

The report warns that both China and Russia are expanding their force of strategic nuclear missiles with new multi-warhead weapons.

North Korea now has three intercontinental-range missiles and is moving ahead with a submarinelaunched ballistic missile.

The report was published days before North Korea on July 4 conducted the first flight test of the new Hwasong-14 missile, described in the report as a new road-mobile ICBM first unveiled in October 2015.

In addition to that missile, North Korea also has another road-mobile ICBM called Hwasong-13, also known as the KN-08, and the Taepo Dong-2.

"Any of these systems could be exported to other countries in the future," the report said.

Iran appears to be on a path to developing long-range missiles as part of what the report said was "Tehran's desire to have a strategic counter to the United States."

Multiple test firings of Iran's Simorgh space launch vehicle are viewed as a test bed for developing long-range missiles.

"In 2015, Iran publicized the launch of the Emad-1, which officials claim is Iran's first long-range missile that is guided throughout flight and capable of hitting its targets with high-precision," the report said.

"Iranian officials have also announced plans for an Emad-2 with greater precision as well as a new Sejjil which can also be guided all the way to the target."

The proliferation of missile systems and technology has resulted in over 20 nations having ballistic missiles that the report said "likely will be a threat in future conflicts involving U.S. forces."

In the past 30 years, missiles were used in several wars, including the Iran-Iraq war, the Afghan civil war, the war in Yemen, the 1991 and 2003 Persian Gulf conflicts, Russian military actions in Chechnya and Georgia, and most recently in the conflicts in Syria and Ukraine.

The NASIC missile threat report is published periodically and is the first report since 2013.

For the first time, the center reveals new details about China's force of "close-range" missiles that could be used in an attack on Taiwan.

The report also warns that new "hypersonic" missiles are being developed that have characteristics of both ballistic and cruise missiles. Ballistic missiles travel in space on a trajectory to their targets while cruise missiles often fly close to land or sea.

Hypersonic missiles are maneuvering weapons launched atop ballistic missiles that glide to their targets. They are being developed by China and Russia as both strategic nuclear and conventional weapons capable of passing through U.S. missile defenses, often at speeds of up to 7,500 miles per hour.

"Overall, the threats posed by ballistic missile delivery systems are likely to continue to increase and grow more complex," the report said.

"Adversary ballistic missile systems are becoming more mobile, survivable, reliable, and accurate while also achieving longer ranges. Hypersonic glide vehicles delivered by ballistic missile boosters are an emerging threat that will pose new challenges to missile defense systems."

China's missile forces are expanding in both numbers and types.

"China continues to have the most active and diverse ballistic missile development program in the world," the report said. "It is developing and testing offensive missiles, forming additional missile units, qualitatively upgrading missile systems, and developing methods to counter ballistic missile defenses."

Beijing's nuclear missile forces are expanding with multiple-warhead systems that will expand China's warhead stockpile in the coming years.

On China's close-range missiles, which can be used in artillery salvos during a conflict with Taiwan or against ships in the South China Sea from newly militarized islands, the report identified 19 different missiles with ranges of between 24 miles to 173 miles.

Russia, North Korea, Iran, Pakistan, and India also have close-range missiles some of which are precision guided.

To defeat increasingly effective missile defenses, short-range missile manufacturers are working on countermeasures, such as maneuverable reentry vehicles called MaRVs.

New missiles with ranges of between 620 miles and 3,400 miles are in development by China, North Korea, Iran, India, and Pakistan, and many will be armed with nuclear or other unconventional warheads.

"All of these countries except Iran have tested nuclear weapons," the report said.

Iran has promised to give up developing nuclear weapons for the next 10 years under the deal reached in 2016. Critics note that the continued development of Iran's long-range missiles is an indication Tehran plans to break out of the treaty in the future.

The report for the first time mentions Russia's new hypersonic missile called the "object 4202" that will be used to penetrate missile defenses. Several other new long-range missiles, including a heavy ICBM called the Sarmat, are being deployed or are in development.

China also is building a new DF-41 road-mobile ICBM that will carry multiple warheads.

"The number of warheads on Chinese ICBMs capable of threatening the United States is expected to grow to well over 100 in the next five years," the report said.

For submarine-launched missiles, the report identified Russia's submarine forces as "substantial" and undergoing modernization. New long-range submarine nuclear missiles include the SS-N-32 Bulava, along with upgraded SS-N-23s.

The intelligence report for the first time confirms that China's new CSS-N-14 submarine-launched missile is deployed on four missile submarines.

"This missile will, for the first time, allow Chinese SSBNs to target portions of the United States from operating areas located near the Chinese coast," the report said.

Cruise missile threats, those that are guided by satellite navigation, also are increasing.

"The cruise missile threat to U.S. forces is increasing in the number of countries possessing [land attack cruise missiles], the number of LACMs, and the number of LACMs possessing advanced capabilities," the report said.

China has a new DH-10 long-range cruise missile and Iran has developed a Soumar cruise missile, based on Russia's AS-15 air launched cruise missile.

Russia's Club-K cruise missile is dubbed the "container launcher" weapon that is fired from what appears as a standard shipping container, making it easy to hide and fire from cargo ships, trains, or commercial trucks.

"The majority of LACMs will still be subsonic, but supersonic and hypersonic missile will be deployed in the future," the report said.

Missile weapons are sought by many nations because they can be used effectively against adversaries with formidable air defenses that make using aircraft impractical or too costly, the report concludes.

"In addition, missiles can be used as a deterrent or an instrument of coercion.... Even limited use of these weapons could have devastating consequences if armed with chemical, biological, or nuclear warheads."

Rick Fisher, a military affairs analyst with the International Assessment and Strategy Center, said the report for the first time details China's growing arsenal of very accurate close-range missiles.

Fisher said China is a world leader in developing new, longer range and precision guided artillery rockets like the 124-mile-range CSS-X-16, and the new 174-mile range CSS-14 Mod-X-2. A third is the 161-miles range CSS-9 Mod-X-2.

"NASIC, however, does not mention that these new systems have the potential to carry five to eight missiles per launcher, so they could rapidly increase the number of missile targeting Taiwan into the multiple thousands, when considering potential reloads," he said.

As a result of the close-range missile threat from China, the United States should speed up development of energy weapon defenses, like rail-guns and lasers that can defeat large numbers of the close-range missiles, he said.

Fisher also notes that the report understates China's potential warhead expansion.

"If China modifies all of its DF-5 to the 10 warhead DF-5C standard, as it has started to modify the older single-warhead DF-5A with the three-to-five warhead DF-5B warhead bus, this type of ICBM alone could account for over 200 warheads," he said.

"Then to this you add the road and rail mobile 10 warhead DF-41, with at least two units of six missiles accounting for 120 warheads. Many times 100 Chinese warheads is much more than 'well over.'"

U.S. warhead cuts under the Obama administration should be reconsidered, he said.

"China's potential to approach at least 1,000 warheads over the next decade, plus Russia's missiles, means the United States must prepare to exceed existing limitations on deployed weapons or face the possibility of coordinated nuclear blackmail from China and Russia," Fisher said.

Mark Schneider, a former Pentagon nuclear missile expert with the National Institute for Public Policy, said the report reveals that Russia's 3M-14 Kalibr cruise missile, capable of being fired from the ground, ships, or submarines, has a range of 1,553 miles.

"This is obviously the INF Treaty violation," he said of the 1987 U.S.-Russian accord banning all ground launched cruise missiles with range of between 620 and 3,420 miles.

The U.S. government has accused Russia of violating the INF treaty but has not provided details of the cruise missile Moscow has deployed in violation of the accord.

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Science News (Washington, DC)

How Earthquake Scientists Eavesdrop On North Korea's Nuclear Blasts

By Alexandra Witze

July 25, 2017

Waves and ripples in the Earth can reveal the location and depth of an explosion

On September 9 of last year, in the middle of the morning, seismometers began lighting up around East Asia. From South Korea to Russia to Japan, geophysical instruments recorded squiggles as seismic waves passed through and shook the ground. It looked as if an earthquake with a

magnitude of 5.2 had just happened. But the ground shaking had originated at North Korea's nuclear weapons test site.

It was the fifth confirmed nuclear test in North Korea, and it opened the latest chapter in a longrunning geologic detective story. Like a police examiner scrutinizing skid marks to figure out who was at fault in a car crash, researchers analyze seismic waves to determine if they come from a natural earthquake or an artificial explosion. If the latter, then scientists can also tease out details such as whether the blast was nuclear and how big it was. Test after test, seismologists are improving their understanding of North Korea's nuclear weapons program.

The work feeds into international efforts to monitor the Comprehensive Nuclear-Test-Ban Treaty, which since 1996 has banned nuclear weapons testing. More than 180 countries have signed the treaty. But 44 countries that hold nuclear technology must both sign and ratify the treaty for it to have the force of law. Eight, including the United States and North Korea, have not.

To track potential violations, the treaty calls for a four-pronged international monitoring system, which is currently about 90 percent complete. Hydroacoustic stations can detect sound waves from underwater explosions. Infrasound stations listen for low-frequency sound waves rumbling through the atmosphere. Radio-nuclide stations sniff the air for the radioactive by-products of an atmospheric test. And seismic stations pick up the ground shaking, which is usually the fastest and most reliable method for confirming an underground explosion.

Seismic waves offer extra information about an explosion, new studies show. One research group is exploring how local topography, like the rugged mountain where the North Korean government conducts its tests, puts its imprint on the seismic signals. Knowing that, scientists can better pinpoint where the explosions are happening within the mountain — thus improving understanding of how deep and powerful the blasts are. A deep explosion is more likely to mask the power of the bomb.

Separately, physicists have conducted an unprecedented set of six explosions at the U.S. nuclear test site in Nevada. The aim was to mimic the physics of a nuclear explosion by detonating chemical explosives and watching how the seismic waves radiate outward. It's like a miniature, nonnuclear version of a nuclear weapons test. Already, the scientists have made some key discoveries, such as understanding how a deeply buried blast shows up in the seismic detectors.

The more researchers can learn about the seismic calling card of each blast, the more they can understand international developments. That's particularly true for North Korea, where leaders have been ramping up the pace of military testing since the first nuclear detonation in 2006. On July 4, the country launched its first confirmed ballistic missile — with no nuclear payload — that could reach as far as Alaska.

"There's this building of knowledge that helps you understand the capabilities of a country like North Korea," says Delaine Reiter, a geophysicist with Weston Geophysical Corp. in Lexington, Mass. "They're not shy about broadcasting their testing, but they claim things Western scientists aren't sure about. Was it as big as they claimed? We're really interested in understanding that."

Natural or not

Seismometers detect ground shaking from all sorts of events. In a typical year, anywhere from 1,200 to 2,200 earthquakes of magnitude 5 and greater set off the machines worldwide. On top of that is the unnatural shaking: from quarry blasts, mine collapses and other causes. The art of using seismic waves to tell one type of event from the others is known as forensic seismology.

Forensic seismologists work to distinguish a natural earthquake from what could be a clandestine nuclear test. In March 2003, for instance, seismometers detected a disturbance coming from near Lop Nor, a dried-up lake in western China that the Chinese government, which signed but hasn't

ratified the test ban treaty, has used for nuclear tests. Seismologists needed to figure out immediately what had happened.

One test for telling the difference between an earthquake and an explosion is how deep it is. Anything deeper than about 10 kilometers is almost certain to be natural. In the case of Lop Nor, the source of the waves seemed to be located about six kilometers down — difficult to tunnel to, but not impossible. Researchers also used a second test, which compares the amplitudes of two different kinds of seismic waves.

Earthquakes and explosions generate several types of seismic waves, starting with P, or primary, waves. These waves are the first to arrive at a distant station. Next come S, or secondary, waves, which travel through the ground in a shearing motion, taking longer to arrive. Finally come waves that ripple across the surface, including those called Rayleigh waves.

In an explosion as compared with an earthquake, the amplitudes of Rayleigh waves are smaller than those of the P waves. By looking at those two types of waves, scientists determined the Lop Nor incident was a natural earthquake, not a secretive explosion. (Seismology cannot reveal the entire picture. Had the Lop Nor event actually been an explosion, researchers would have needed data from the radionuclide monitoring network to confirm the blast came from nuclear and not chemical explosives.)

For North Korea, the question is not so much whether the government is setting off nuclear tests, but how powerful and destructive those blasts might be. In 2003, the country withdrew from the Treaty on the Nonproliferation of Nuclear Weapons, an international agreement distinct from the testing ban that aims to prevent the spread of nuclear weapons and related technology. Three years later, North Korea announced it had conducted an underground nuclear test in Mount Mantap at a site called Punggye-ri, in the northeastern part of the country. It was the first nuclear weapons test since India and Pakistan each set one off in 1998.

By analyzing seismic wave data from monitoring stations around the region, seismologists concluded the North Korean blast had come from shallow depths, no more than a few kilometers within the mountain. That supported the North Korean government's claim of an intentional test. Two weeks later, a radionuclide monitoring station in Yellowknife, Canada, detected increases in radioactive xenon, which presumably had leaked out of the underground test site and drifted eastward. The blast was nuclear.

But the 2006 test raised fresh questions for seismologists. The ratio of amplitudes of the Rayleigh and P waves was not as distinctive as it usually is for an explosion. And other aspects of the seismic signature were also not as clear-cut as scientists had expected.

Researchers got some answers as North Korea's testing continued. In 2009, 2013 and twice in 2016, the government set off more underground nuclear explosions at Punggye-ri. Each time, researchers outside the country compared the seismic data with the record of past nuclear blasts. Automated computer programs "compare the wiggles you see on the screen ripple for ripple," says Steven Gibbons, a seismologist with the NORSAR monitoring organization in Kjeller, Norway. When the patterns match, scientists know it is another test. "A seismic signal generated by an explosion is like a fingerprint for that particular region," he says.

With each test, researchers learned more about North Korea's capabilities. By analyzing the magnitude of the ground shaking, experts could roughly calculate the power of each test. The 2006 explosion was relatively small, releasing energy equivalent to about 1,000 tons of TNT — a fraction of the 15-kiloton bomb dropped by the United States on Hiroshima, Japan, in 1945. But the yield of North Korea's nuclear tests crept up each time, and the most recent test, in September 2016, may have exceeded the size of the Hiroshima bomb.

Digging deep

For an event of a particular seismic magnitude, the deeper the explosion, the more energetic the blast. A shallow, less energetic test can look a lot like a deeply buried, powerful blast. Scientists need to figure out precisely where each explosion occurred.

Mount Mantap is a rugged granite mountain with geology that complicates the physics of how seismic waves spread. Western experts do not know exactly how the nuclear bombs are placed inside the mountain before being detonated. But satellite imagery shows activity that looks like tunnels being dug into the mountainside. The tunnels could be dug two ways: straight into the granite or spiraled around in a fishhook pattern to collapse and seal the site after a test, Frank Pabian, a nonproliferation expert at Los Alamos National Laboratory in New Mexico, said in April in Denver at a meeting of the Seismological Society of America.

Researchers have been trying to figure out the relative locations of each of the five tests. By comparing the amplitudes of the P, S and Rayleigh waves, and calculating how long each would have taken to travel through the ground, researchers can plot the likely sites of the five blasts. That allows them to better tie the explosions to the infrastructure on the surface, like the tunnels spotted in satellite imagery.

One big puzzle arose after the 2009 test. Analyzing the times that seismic waves arrived at various measuring stations, one group calculated that the test occurred 2.2 kilometers west of the first blast. Another scientist found it only 1.8 kilometers away. The difference may not sound like a lot, Gibbons says, but it "is huge if you're trying to place these relative locations within the terrain." Move a couple of hundred meters to the east or west, and the explosion could have happened beneath a valley as opposed to a ridge — radically changing the depth estimates, along with estimates of the blast's power.

Gibbons and colleagues think they may be able to reconcile these different location estimates. The answer lies in which station the seismic data come from. Studies that rely on data from stations within about 1,500 kilometers of Punggye-ri — as in eastern China — tend to estimate bigger distances between the locations of the five tests when compared with studies that use data from more distant seismic stations in Europe and elsewhere. Seismic waves must be leaving the test site in a more complicated way than scientists had thought, or else all the measurements would agree.

When Gibbons' team corrected for the varying distances of the seismic data, the scientists came up with a distance of 1.9 kilometers between the 2006 and 2009 blasts. The team also pinpointed the other explosions as well. The September 2016 test turned out to be almost directly beneath the 2,205-meter summit of Mount Mantap, the group reported in January in Geophysical Journal International. That means the blast was, indeed, deeply buried and hence probably at least as powerful as the Hiroshima bomb for it to register as a magnitude 5.2 earthquake.

Other seismologists have been squeezing information out of the seismic data in a different way — not in how far the signals are from the test blast, but what they traveled through before being detected. Reiter and Seung-Hoon Yoo, also of Weston Geophysical, recently analyzed data from two seismic stations, one 370 kilometers to the north in China and the other 306 kilometers to the south in South Korea.

The scientists scrutinized the moments when the seismic waves arrived at the stations, in the first second of the initial P waves, and found slight differences between the wiggles recorded in China and South Korea, Reiter reported at the Denver conference. Those in the north showed a more energetic pulse rising from the wiggles in the first second; the southern seismic records did not. Reiter and Yoo think this pattern represents an imprint of the topography at Mount Mantap.

"One side of the mountain is much steeper," Reiter explains. "The station in China was sampling the signal coming through the steep side of the mountain, while the southern station was seeing the more shallowly dipping face." This difference may also help explain why data from seismic stations spanning the breadth of Japan show a slight difference from north to south. Those differences may reflect the changing topography as the seismic waves exited Mount Mantap during the test.

Learning from simulations

But there is only so much scientists can do to understand explosions they can't get near. That's where the test blasts in Nevada come in.

The tests were part of phase one of the Source Physics Experiment, a \$40-million project run by the U.S. Department of Energy's National Nuclear Security Administration. The goal was to set off a series of chemical explosions of different sizes and at different depths in the same borehole and then record the seismic signals on a battery of instruments. The detonations took place at the nuclear test site in southern Nevada, where between 1951 and 1992 the U.S. government set off 828 underground nuclear tests and 100 atmospheric ones, whose mushroom clouds were seen from Las Vegas, 100 kilometers away.

For the Source Physics Experiment, six chemical explosions were set off between 2011 and 2016, ranging up to 5,000 kilograms of TNT equivalent and down to 87 meters deep. The biggest required high-energy–density explosives packed into a cylinder nearly a meter across and 6.7 meters long, says Beth Dzenitis, an engineer at Lawrence Livermore National Laboratory in California who oversaw part of the field campaign. Yet for all that firepower, the detonation barely registered on anything other than the instruments peppering the ground. "I wish I could tell you all these cool fireworks go off, but you don't even know it's happening," she says.

The explosives were set inside granite rock, a material very similar to the granite at Mount Mantap. So the seismic waves racing outward behaved very much as they might at the North Korean nuclear test site, says William Walter, head of geophysical monitoring at Livermore. The underlying physics, describing how seismic energy travels through the ground, is virtually the same for both chemical and nuclear blasts.

The results revealed flaws in the models that researchers have been using for decades to describe how seismic waves travel outward from explosions. These models were developed to describe how the P waves compress rock as they propagate from large nuclear blasts like those set off starting in the 1950s by the United States and the Soviet Union. "That worked very well in the days when the tests were large," Walter says. But for much smaller blasts, like those North Korea has been detonating, "the models didn't work that well at all."

Walter and Livermore colleague Sean Ford have started to develop new models that better capture the physics involved in small explosions. Those models should be able to describe the depth and energy release of North Korea's tests more accurately, Walter reported at the Denver meeting.

A second phase of the Source Physics Experiment is set to begin next year at the test site, in a much more rubbly type of rock called alluvium. Scientists will use that series of tests to see how seismic waves are affected when they travel through fragmented rock as opposed to more coherent granite. That information could be useful if North Korea begins testing in another location, or if another country detonates an atomic bomb in fragmented rock.

For now, the world's seismologists continue to watch and wait, to see what the North Korean government might do next. Some experts think the next nuclear test will come at a different location within Mount Mantap, to the south of the most recent tests. If so, that will provide a fresh challenge to the researchers waiting to unravel the story the seismic waves will tell.

"It's a little creepy what we do," Reiter admits. "We wait for these explosions to happen, and then we race each other to find the location, see how big it was, that kind of thing. But it has really given us a good look as to how [North Korea's] nuclear program is progressing." Useful information as the world's nations decide what to do about North Korea's rogue testing.

https://www.sciencenews.org/article/earthquakes-north-korea-nucleartesting?mode=topic&context=62

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Sputnik (Moscow, Russia)

US Desires to Remain in INF Treaty With Russia - Strategic Command Head

Author Not Attributed

July 26, 2017

The United States would like to remain in the Intermediate-Range Nuclear Forces (INF) Treaty with Russia, and moreover desires that both nations be in compliance with the agreement, US Strategic Command (STRATCOM) commander Gen. John Hyten said on Wednesday.

The INF Treaty, signed in 1987, significantly reduced the arsenal of non-strategic missiles available to the United States and Russia by prohibiting all nuclear and conventional missiles and their launchers with range between 310 and 3,420 miles. The United States and Russia have repeatedly accused each other of violating the INF treaty.

"Our desire is to be in the INF treaty with the Russians and to be both in compliance," Hyten stated at the seventh annual STRATCOM Deterrence Symposium in Omaha, Nebraska on Wednesday.

US Potential Unilateral Withdrawal From INF Treaty Puts Europe at Risk

Earlier, Politico reported that some members of the Republican Party have pressured the Trump administration to begin developing new weapons that are prohibited by the accord. However, Special Assistant to the President and National Security Council (NSC) Senior Director for Weapons of Mass Destruction and Counterproliferation Christopher Ford told Sputnik that the US does not want to withdraw from the INF Treaty.

However, Hyten claimed Russia has allegedly violated the INF treaty, albeit not in a major way, and it is up to the United States to respond to the agreement's violations.

"My view from a military perspective, is that if you have a nation that is party to a treaty and that have violated the treaty, which the Russians have, not largely, but nonetheless they violated the treaty, then it's up to the United States to respond," Hyten said.

Russian Foreign Ministry Says Time to End Russia-US Dispute on INF Treaty

The STRATCOM commander said "tit for tat" responses can be useful, but are not always the best response to such violations.

"You have to look at the overall strategic situation, and then respond strategically. And that may involve pursuing nuclear capabilities, that may involve doing a number of different things, but it may involve political responses, it may involve economic responses, it may involve a number of different things," Hyten said.

Russian Foreign Minister Sergei Lavrov has repeatedly said that Moscow was in full compliance with the INF treaty. According to Lavrov, Moscow had its own concerns over Washington's

compliance with the INF Treaty and had repeatedly called on the US to discuss the most controversial points related to the agreement's implementation in substance.

https://sputniknews.com/us/201707261055904419-us-inf-russia-stratcom/

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ASIA-PACIFIC

Business Insider (New York, NY)

Everything We Know About North Korea's Bioweapons Program

By Kevin Loria

July 25, 2017

North Korea's successful launch of an intercontinental ballistic missile on July 4 heightened global fears about the deadly threat of nuclear war.

But nuclear weapons are not the only weapons of mass destruction that experts think North Korea is developing. They warn that the secretive state also possesses chemical weapon stores and may maintain an ongoing biological weapons program as well.

Biological weapons are particularly scary, since they could ignite a global disease pandemic as devastating as nuclear war — a threat Bill Gates wrote about in an op-ed for Business Insider in February.

The status and capabilities of North Korea's biological weapons program are mysterious, Sonia Ben Ouagrham-Gormley, an associate professor at George Mason University and the author of "Barriers to Bioweapons", wrote in a recent analysis for the Bulletin of the Atomic Scientists.

It's likely that North Korea has been developing such weapons since the 1960s, according to most experts. Defectors and South Korean reports have suggested that North Korean researchers have worked with biological agents the US governments considers serious threats, including plague, anthrax, viral hemorrhagic fevers, and potentially smallpox.

An attack that uses such agents could be particularly scary since it can be difficult to ascertain where they came from.

"With biological weapons, especially, there's an opportunity for covert attack with deniability, since attribution would be difficult," Andrew C. Weber, former assistant secretary of defense for nuclear, chemical and biological weapons defense programs, recently told the Washington Post while discussing North Korea's bioweapon capabilities.

An active bioweapons program?

It's impossible to know how far along North Korea is in developing bioweapons, Ouagrham-Gormley wrote.

Kim Jong Un visited Pyongyang's Bio-technical Institute in 2015, where he was photographed by North Korean television posing with lab equipment and military personnel. This effort was likely "designed to send a message to the United States: that North Korea has an active bioweapons program," Ouagrham-Gormley wrote.

South Korean news reports have also indicated that North Korea is "likely capable" or "suspected" of being able to produce biological weapons.

But Ouagrham-Gormley suggested that if you look at the scientific requirements for maintaining such a program and the political and technological infrastructure required, "the odds that North Korea has established a successful bioweapons program appear much lower than some estimates would suggest."

Still, other experts caution that the risk of these weapons is real and that such programs could be well-concealed.

A recent report written by North Korea expert Joseph S. Bermudez Jr. for the US Korea Institute and Johns Hopkins School of Advanced International Studies suggested that "North Korea has deliberately built its NBC [nuclear, biological, chemical] infrastructures in extreme secrecy; undertaken camouflage, concealment and deception operations to mask the NBC infrastructure; made extensive use of legitimate defensive or civilian industrial and research infrastructures; and dispersed NBC facilities around the country."

That report identifies a number of different institutions as potentially linked to a biowarfare program.

Bruce Bennet of the global policy think tank the RAND Corporation echoed a similar sentiment when he testified about North Korea before Congress in 2013.

"Biological weapon programs are easier to hide than most military programs because they can be developed in a university setting or hidden within efforts to develop related vaccines," he said. "As a result, the outside world has little direct information on North Korean biological weapons and therefore has mainly indirect inferences, creating substantial uncertainties."

In 2015, a North Korean scientist defected to Finland with what he said was electronic documentation that showed North Korea had tested biological and chemical weapons on citizens. He's not the only defector to make such allegations, though none of those claims have been confirmed.

The most recent event to spur speculation about North Korea's bioweapons capabilities was the assassination of Kim Jong Nam, the half-brother of Kim Jong Un, which used the chemical weapon VX. Though VX is chemical, not biological, experts suggested that the event proved North Korea is willing to use these types of weapons.

Barriers to bioweapons

Kim's 2015 photo-op demonstrated that at the very least, North Korea has equipment that would allow scientists there to work with biological weapons.

But Ouagrham-Gormley cautioned against assuming too much based on those images: "When threat assessments are made solely on the basis of the equipment to which nations have gained access, grossly exaggerated evaluations of capabilities are possible — just witness Libya and Iraq's nuclear and biological weapons programs," she wrote.

In other words, it's possible that North Korea's photo ops with lab equipment are choreographed in the same way as the TV reports we see of smiling people, missiles paraded through Pyongyang, and malls filled with products that aren't actually for sale.

Plus, developing a bioweapons program requires a tradition of scientific expertise, with knowledge passed on within institutions and junior scientists free to question, criticize, and collaborate with those in charge of such a program. It's hard to create that atmosphere in an autocratic setting, according to Ouagrham-Gormley. The absence of a scientific tradition is largely why the Iraqi biowarfare program under Saddam Hussein was less far along than we expected.

Economic stability is also needed to ensure that the power stays on in labs and that there are adequate security precautions in place to protect facilities packed with deadly, contagious, and twitter.com/USAF_CUWS | cuws.au.af.mil // 27

fragile microorganisms. From what we know about North Korea's medical sector, the country would likely struggle to safely store and weaponize these sorts of pathogens.

"It is quite possible that North Korea has engaged in exploratory bioweapons research, but it is unlikely that the country has been able to establish the conditions required to achieve a working bioweapon," Ouagrham-Gormley wrote.

If facilities aren't properly powered and secured, any sort of failure could result in the loss or accidental release of a deadly pathogen.

"[The Korean People's Army] must calculate that biological warfare is potentially a greater threat to the KPA than to South Korea or the United States due to its limited medical and bio-medical capabilities," Bermudez wrote in his report.

http://www.businessinsider.com/north-korea-biological-warfare-bioweapons-program-2017-7

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South China Morning Post (Hong Kong, China)

US Within Reach: China Shows Off New and Improved Advanced Missile System

By Kevin Loria

July 25, 2017

China has publicly displayed for the first time a model of an advanced form of one its intercontinental ballistic missiles as the country's military prepares to celebrate the 90th anniversary of the founding of the People's Liberation Army later this year.

A model of the Dongfeng-31AG – an upgraded version of the DF-31A – was shown for the first time at an exhibition marking the anniversary at the Military Museum of the Chinese People's Revolution in Beijing last week.

The new missile system is expected to share a similar estimated range of 11,000km with the DF-31A – enough to reach most locations within the continental United States and the capitals of Europe – but will be more mobile thanks to its new carrier vehicle design, military experts said.

The DF-31AG is based on an eight axle launch vehicle that can go off-road – the DF-31A's carrier is limited to hard surfaced roads.

The Macau-based military expert Antony Wong Dong said the new type of missile system adopted technology used in intermediate-range missiles such as the DF-26 and long-range DF-41. They do not need a prepared launch site as their carriers can stop at any time to fire a nuclear warhead.

"Its survival capability is greatly enhanced," Wong said.

Missiles with high mobility are seen as a greater strategic threat than those deployed in silos because they can be moved and hidden to avoid detection by satellites or other devices, making them harder to track down or target during a conflict.

Zhou Chenming, a military observer based in Beijing, said the DF-31AG may be able to carry a single or multiple nuclear warheads, or a large single conventional warhead.

"From the way it looks, the DF-31AG's canister is a bit bigger than that of the DF-31A. This might mean that it's more powerful, or that it might be used to fire conventional missiles in addition to nuclear missiles," Zhou said.

China was heading towards developing ballistic missiles which can shoot both nuclear and conventional warheads, according to Zhou.

""We're not in the cold war anymore, extremely powerful weapons like nuclear missiles are no longer the mainstrean," said Zhou. "We'll still keep our nuclear strength, but when we face some regular threats we don't need to use nuclear warheads to attack, but will resort to some conventional warheads instead."

The PLA Daily, the Chinese military's official newspaper, said in May last year that the development of ground-to-ground missiles with nuclear and conventional strike abilities was "an inexorable trend".

But military expert Anthony Wong Dong disagreed.

He said the new DF-31AG appeared to be only capable of carrying a single warhead and talk of it carrying nuclear and conventional payloads was pure speculation.

"It shouldn't overlap with the function of DF-41 [a multi-warhead ICBM] and should serve a different purpose," he said.

The US-based website the Washington Free Beacon reported three years ago that China had conducted the first test flight of what analysts suggested was a multi-warhead missile, based on the DF-31A, called the DF-31B.

The Chinese authorities have not commented on the report.

http://www.scmp.com/news/china/diplomacy-defence/article/2103880/china-gives-glimpseadvanced-missile-and-launch-system

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38 North (Washington, DC)

Sinpo South Shipyard: Preparations for a New SLBM Test?

By Joseph Bermudez

July 20, 2017

Recent media reports indicate that North Korea's sole SINPO-class experimental ballistic missile submarine (SSBA) has been engaged in "'unusual deployment activity' over the past 48 hours," sailing approximately 100-km out into the East Sea (Sea of Japan). If correct, this would be the submarine's longest known voyage to date. Most previous voyages have been far shorter and within the waters near its home port at the Sinpo South Shipyard. A 100-km voyage would also likely place the submarine in international waters—a first for the vessel. While there are several possible explanations, the most likely is preparations for a test in the near future of an updated Pukguksong-1 (KN-11) submarine-launched ballistic missile (SLBM) or a potentially newer system.

Commercial satellite imagery from June 30 of the Sinpo South Shipyard shows activity at the facility's secure boat basin, where both the SINPO-class submarine and the submersible test stand barge have been repositioned. While the precise reason for this movement is unclear, one possibility is that it may have been long-term preparations for the recently reported voyage or an upcoming missile test.

Activity at Secure Boat Basin

Imagery from June 30 indicates that the SINPO-class submarine was repositioned forward along the dock and the submersible test stand barge was moved from its position along the south pier

enclosing the boat basin and berthed along the dock aft of the submarine. Both had been in their former positions since December 9, 2016. The June image also showed that the equipment previously positioned on the deck of the submarine, aft of the conning tower, were no longer present, suggesting that ongoing repair or modification work had been completed. A number of potential reasons can explain this movement, including long-term preparations for a test of the Pukguksong-1, at-sea deployments of one or both craft during late-May, pre-deployment training and routine maintenance or a combination of these.

Although North Korea has conducted 13 ballistic missile tests so far in 2017, including two of the Pukguksong-2 (KN-15) medium-range ballistic missile (MRBM), it is not known to have conducted any static or underway tests of the Pukguksong-1 since August 21, 2016. While the test launches of the Pukguksong-2 are undoubtedly of value to the Pukguksong-1 program, continued testing from a submarine is essential to bring a SLBM into service. Given the April 2017 acquisition of a second submersible test stand barge and other continuing ballistic missile activities and tests, it is likely that the North will have to conduct additional SLBM tests in the future in order to develop a viable weapon system. This test would likely be of an updated Pukguksong-1 or potentially a newer system.

It is unclear how future SLBM testing and development will be divided between the submersible test stand barges at Sinpo and the new one presently at Nampo. It is conceivable that the North will use the second barge located on the west coast to test longer-range versions of the KN-11 by launching them from the West Sea over the peninsula to impact in the East Sea (Sea of Japan); this, however, remains to be seen.

In order for the North to deploy a viable SLBM capability, it will not only have to complete development and testing of the KN-11 (or similar SLBM), but also build and put into service a new class of ballistic missile submarine (SSB) sometime within the next five years. While the movement of large parts in and out of the fabrication and construction halls at the Sinpo South Shipyard indicates that the North is building something, it is unknown if it is a SSB. While not necessarily conclusive, a preliminary imagery survey of east coast shipyards capable of building an SSB provides no indications of such construction.

Elsewhere at the Sinpo South Shipyard

No new activity is noted at the static test stand used since 2014 for verification of Pukguksong-1 launch systems and pop-up and prototype testing. The heavy-lift crane and flat-bed truck noted during May are not present in the June 30 image and there is no evidence or reports of any testing since August 2016. The service tower, which until September 2015 was routinely disassembled and removed for testing, remains in place.

The construction of a new building in the center of the shipyard begun in late-2016 appears to be externally complete in the latest image. A heavy-lift crane is present between the fabrication and construction halls and changing contents of the parts yard indicates that a construction program of unknown nature is being undertaken by the shipyard. No other changes of significance are noted at the facility.

Construction, which began in 2012, of what appears to be a new construction hall on the southern tip of the Sinpo peninsula continues slowly. Approximately 225 meters long, the positioning and construction methods of the hall suggest that when complete it may be covered with earth to provide protection from possible attack. The associated L-shaped pier is now 210 meters long and caissons, for use in extending it, are visible at nearby docks.

It should also be noted that the port and associated facilities at Nopyong-ni, 800 meters west of the Sinpo South Shipyard and on the west side of the Sinpo peninsula, have been undergoing significant modernization and rebuilding since 2015. This has included the razing of a number of buildings,

construction of a new building, refurbishing of other buildings and construction of a new seawall and T-head pier. Whether this is related to the development and fielding of a future SSB capability is unknown.

http://www.38north.org/2017/07/sinpo072017/

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The Diplomat (Tokyo, Japan)

North Korea May Test a Second Intercontinental Ballistic Missile Any Day Now

By Ankit Panda

July 25, 2017

North Korea's Hwasong-14 ICBM may fly again soon.

North Korea may soon conduct a second test of its two-stage, liquid-fueled Hwasong-14 (KN20) intercontinental ballistic missile (ICBM), The Diplomat has learned from a U.S. government source with knowledge of North Korea's weapons programs.

The test is likely to occur from near Panghyon Airport or elsewhere near Kusong, in North Korea's North Pyongan province. North Korea's first-ever ICBM flight-test was launched from a launchpad near Panghyon Airport.

U.S. military intelligence has spotted a Hwasong-14 transporter-erector and firing-table transporter in Kusong, the source tells The Diplomat. While road-mobile, the Hwasong-14 ICBM, at least in its testing and development configuration, requires a static firing-table for launch.

The transporter-erector is likely the same modified WS51200 Chinese-origin logging truck that was seen in released footage of the July 4 test.

The ICBM test launch could take place as soon as Tuesday, ahead of July 27, which is celebrated as "Victory Day" in the Korean War in North Korea.

North Korea does not always conduct missile tests to coincide with auspicious dates or public holidays, but testing in recent years, under Kim Jong-un's leadership, has often come within days of prominent holidays.

The test would come as the international community remains divided over an appropriate reaction to North Korea's July 4 test.

The United Nations Security Council remains at an impasse over its response to the July 4 launch as the Russian Federation continues to insist that North Korea tested an intermediate-range ballistic missile on that day, according to Russian intelligence data.

What to Look For in a Second KN20 Test

North Korea could look to test several parameters of the ICBM with its anticipated upcoming test. For instance, as Jeffrey Lewis has suggested, the capability demonstrated during the July 4 test of the Hwasong-14 may have been deceptive about the maximum strike range of the new missile.

Since its exceptionally provocative 1998 test of the Taepodong-1 satellite launch vehicle, North Korea has not conducted a ballistic missile or satellite launch that has overflown Japan.

Constrained by this self-imposed restriction on overflying Japan, North Korea has repeatedly fired its medium-, intermediate-, and, as of July 4, its intercontinental-range ballistic missiles at a sharp vertical angle to shorten the range.

This allows North Korea's engineers to collect important data about the performance of the missile without firing it at the more normal, or "minimum energy," trajectory the projectile would see in operational use.

Nevertheless, the July 4 ICBM landed within Japan's exclusive economic zone — an increasingly common occurrence with North Korea's missile testing as Pyongyang inaugurates higher-performance, longer-range systems.

However, despite the already highly provocative nature of EEZ splashdowns, North Korea could test the Hwasong-14 to a higher performance standard by flying the missile to a more extended range, forcing it to land farther into Japan's EEZ.

According to the U.S. government source, the observed splashdown point of the July 4 Hwasong-14 test-flight was still more than 150 nautical miles from the Japanese coast.

As a result, North Korea could look to prove a longer range with an upcoming test, which would also allow the Hwasong-14's reentry vehicle to experience additional stress.

The next test could also feature different burn times on the missile's two stages. During the July 4 test, the first stage engine burned for 145 seconds and the second stage burned for 233 seconds, according to a source who spoke to The Diplomat.

Based on the demonstrated performance of the July 4 test, the Hwasong-14 is assessed to at least be capable of striking targets 7,500 kilometers away. The United States government assesses that the missile's performance may range up to 9,500 kilometers and some independent assessments anticipate a greater potential range yet — sufficient to strike well into the contiguous United States, including East Coast urban centers.

An SLBM Test Too?

In addition to an anticipated ICBM test, last week, CNN, citing U.S. officials, noted that North Korea could be on the cusp of testing a submarine-launched ballistic missile (SLBM) — presumably its solid-fuel Pukkuksong-1 (KN11) SLBM.

Part of this assessment was based on a North Korean submarine that was spotted about 100 kilometers into international waters in the Sea of Japan.

A U.S. government source additionally confirmed to The Diplomat that the submarine that deployed out Sinpo earlier this month was a Romeo-class diesel-electric submarine and not the lone Gorae-class ballistic missile submarine, which remains in testing and development at the Sinpo shipyard.

North Korea, however, has been carrying out further testing and development on its KN11 SLBM. On May 30, North Korea conducted a land-based ejection test of the missile at Sinpo, presumably testing the KN11's cold launch systems.

The source added that, despite the testing activity in May, an SLBM test did not appear imminent.

http://thediplomat.com/2017/07/north-korea-may-test-a-second-intercontinental-ballisticmissile-any-day-now/

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EUROPE/RUSSIA

RT (Moscow, Russia)

Trident Nuclear Submarine Replacement Plans 'Unachievable' - Spending Watchdog

Author Not Attributed

July 26, 2017

Multi-billion pound projects to upgrade and renew Britain's nuclear arsenal have been branded "unachievable" by the Infrastructure and Projects Authority (IPA) in its report to the Treasury and Cabinet Office.

The watchdog's report, which was picked up by the Ferret investigative website, found that major projects relating to the nuclear deterrent are poorly managed, over budget, and subject to technical difficulties.

Those projects are the £1.7 billion (US\$2.2bn) nuclear reactor manufacturing program and the program to build four nuclear-armed and seven nuclear-powered submarines at a cost of £31 billion and £9 billion respectively.

The reactor manufacturing project, based at Rolls Royce in Derby, picked up the worst possible IPA rating after being marked as "red," with the author's warning that "successful delivery of the project appears to be unachievable."

"There are major issues with project definition, schedule, budget, quality and/or benefits delivery, which at this stage do not appear to be manageable or resolvable.

"The project may need re-scoping and/or its overall viability reassessed," the investigators added, warning that reactor building was £250,000 million (\$325mn) over budget.

The submarine building project, which has so far delivered three nuclear-powered Astute–class warships, has been rated "amber/red" for the third successive year.

The IPA report said: "Successful delivery of the project is in doubt, with major risks or issues apparent in a number of key areas.

"Urgent action is needed to address these problems and/or assess whether resolution is feasible."

The study found that "overall affordability" was the main impediment to the submarine building program.

As the submarines are bound for the UK's nuclear base near Faslane, Scotland, the findings quickly attracted comment from the Scottish National Party (SNP) and anti-nuclear campaigners north of the border.

"A billion here – a billion there – to add to the bill for these weapons of mass destruction," SNP defense spokesperson Stewart McDonald MP told the Ferret.

"The Westminster obsession with Trident is already squeezing conventional defense expenditure as everything else is sacrificed for these redundant, eye-wateringly expensive weapons. The Tories need to get a grip on costs if they insist on Trident renewal."

Arthur West, the chairman of the Scottish Campaign for Nuclear Disarmament, told the website: "The Trident program in particular continues to be a shambles from a cost point of view."

The Ministry of Defense defended the poor ratings, saying they "reflect the complexity and scale of delivering the most advanced submarines ever commissioned by the Royal Navy, the ultimate guarantee of our national security."

https://www.rt.com/uk/397432-trident-war-plans-unachievable/

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Financial Times (London, UK)

Glastonbury Founder Says Jeremy Corbyn Plans to Scrap Trident

By Jim Pickard and Mark Odell

July 26, 2017

Labour leader reportedly said he wants to end nuclear deterrent 'as soon' as he can

Labour leader Jeremy Corbyn reopened a perpetual argument about Britain's nuclear deterrent at the weekend, after reportedly telling the organiser of the Glastonbury Festival that he wanted to scrap Trident.

Mr Corbyn made an appearance on the music festival's main stage on Saturday afternoon, where he was hailed as a hero by the crowd of mostly young people.

Michael Eavis, who holds Glastonbury on his Somerset farm, was subsequently asked during a public Q&A what the pair had talked about just before Mr Corbyn took the stage.

He replied that Mr Corbyn had told him he would be prime minister "in six months" and that he then planned to scrap the Trident missile programme "as soon as I can", according to Somerset Live, a local news outlet.

A Labour source said the festival impresario was "paraphrasing" the conversation.

But the latest comments reopen a festering sore within the Labour party, given that union leaders and most MPs think the UK should maintain a nuclear deterrent. Mr Corbyn, a former leading light in the Campaign for Nuclear Disarmament, has been a life-long opponent of Trident.

The issue prompted a row at last autumn's Labour party conference, with Clive Lewis, then the shadow defence secretary, cutting a deal with union bosses to accept the continuation of Trident — only to be forced to rewrite his speech at the last minute by Mr Corbyn's team. Mr Lewis was so frustrated that he reportedly punched a wall and subsequently quit the defence brief.

Labour campaigned in the run-up to this month's general election on a manifesto that professed to support maintaining Trident.

Even then, however, Mr Corbyn struggled to toe the party line, at one point telling the BBC that nuclear weapons were a "disaster" and Trident would be part of a comprehensive defence review if he made it to Number 10. Andrew Gwynne, Labour's campaign co-ordinator, later insisted the party was committed to a credible nuclear deterrent.

A spokesman for Mr Corbyn said on Sunday that the party was committed to the nuclear nonproliferation treaty, which aimed to achieve a nuclear-free world.

"Trident renewal is Labour policy, as spelled out in our manifesto, which Jeremy and the party were proud to stand on in the election," the spokesman said.

There have historically been strong links between Glastonbury and the Campaign for Nuclear Disarmament — the festival was even named the "Glastonbury CND Festival" between 1981 and 1990. Mr Eavis has been a generous fundraiser for the campaign, especially during the 1980s, when he donated as much as £100,000 in a single year.

https://www.ft.com/content/da81b73a-5a41-11e7-b553-e2df1b0c3220

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Stars & Stripes (Washington, DC)

Concerns Raised Over Military Presence, Nukes Stored In Turkey

By John Vandiver

July 26, 2017

The U.S. should move its nuclear weapons from Incirlik Air Base and start looking for alternatives to the longtime military hub in Turkey, a country that can no longer be fully relied on, analysts and former military officials said.

The U.S. military maintains about 50 nuclear warheads at Incirlik, according to nuclear watchdog organizations.

"It is the worst place possible to be keeping nuclear weapons," said Joseph Cirincione, president of the Ploughshares Fund, a prominent nonprofit advocacy group.

The strained relationship between the U.S. and Turkey, a NATO ally, has steadily deteriorated in the wake of an attempted mutiny against the Ankara government in July 2016. Critics say Turkey is now behaving more like an adversary than an ally.

Since the coup attempt, Turkish President Recep Erdogan has cracked down on the opposition, raising concerns inside NATO about an authoritarian overhaul.

Turkey also has been at odds with the aims of the U.S.-led coalition in Syria and publicly flirted with purchasing Russian-made air defense systems. Ankara is suspected of leaking the locations of sensitive U.S. bases inside Syria to a state-run news agency and also engaged in a diplomatic spat with Germany that recently forced Berlin to pull its forces out of Incirlik.

Concern over warheads

The U.S. military does not comment on the locations of the weapons as a standing policy, but Incirlik's housing of the warheads has long been common knowledge. Now it is a source of growing concern.

At Incirlik, "it is not safe for our military spouses and children, but it is OK for 50 hydrogen bombs to be there?" he said.

A former senior NATO official echoed such worries: "If there are nuclear weapons stored in Turkey, they should be removed given the instability, both in the country and across the border in Syria and Iraq."

U.S. forces have been a steady presence at Incirlik since the early days of the Cold War, when an alliance with Turkey served as a bulwark against the Soviet Union at the crossroads between Europe and the Middle East.

Family members of U.S. forces were often a constant presence on base, but that changed in 2016 when the Air Force ordered all dependents home, citing security concerns.

Months later, elements of the Turkish military attempted a coup that involved Turkish personnel based at Incirlik. Power was cut off for several days, even as the U.S. attempted to conduct operations against Islamic State in nearby Syria.

"Given recent events in Turkey, especially reports of the reported Turkish decision to purchase a Russian missile system, NATO would be wise to be considering a Plan B in the case that the alliance is asked to leave Incirlik," said James Stavridis, a retired admiral and former NATO Supreme Allied Commander-Europe.

"We are looking rather weak. We are looking rather uncoordinated and not very strategic," said Charles Wald, a retired general and former deputy commander at U.S. European Command. "Right after the coup attempt they shut our base down for about a week ... I think Turkey needs to be treated in some cases, at the very least, as neutral."

Stored at Incirlik are B61 gravity bombs, which at their maximum yield are about 10 times more powerful than the bomb dropped on Hiroshima, Cirincione said. The weapons can be dialed back to explode with a smaller yield.

But there is little to no strategic value in keeping the weapons at Incirlik, where there are no aircraft capable of carrying the bombs, Cirincione said.

The warheads are more of a legacy of the Cold War than a crucial part of the U.S.'s nuclear deterrent strategy, he said.

"It is bureaucratic inertia and some vague extended deterrence concerns that keep them there," Cirincione said.

During a recent stop at EUCOM headquarters in Stuttgart, U.S. Strategic Command's Gen. John Hyten, who oversees the U.S. nuclear arsenal, declined to comment on the location of nuclear weapons or security at Incirlik. However, Hyten did say ensuring the safety of all U.S. warheads was his top priority.

Troop relocation

Beyond the nuclear issue, the U.S. should exploring relocating the 2,500 U.S. troops at Incirlik, former military commanders said.

The air base has played a key role as launching pad for surveillance aircraft and fighters conducting strikes against ISIS targets in Syria. Yet it is not irreplaceable, top former commanders say.

"One alternative to immediately consider would be Greece, which certainly has excellent basing facilities both in the Mediterranean on Crete and on the mainland of Greece itself," said Stavridis, dean of the Fletcher School of Law and Diplomacy at Tufts University in Massachusetts.

Germany, which pulled its troops out of Incirlik earlier this month after Ankara refused repeated requests from Berlin to allow lawmakers to visit troops there, is in the process of transferring its forces to Jordan.

Wald said Jordan also could host U.S. forces.

"I think we can go to other places," Wald said. "I think Jordan is a fantastic ally and partner. I think it is time for the United States to start thinking in those terms."

For now, there is no sign the Pentagon is entertaining such ideas. Publicly, leaders like EUCOM's Gen. Curtis M. Scaparrotti talk up the value of the relationship with Turkey. Public criticism is rare from active-duty military officials.

Other countries that Washington could consider include Bulgaria and Romania, which have air bases strategically placed near the Black Sea, according to an analysis by the Bipartisan Policy Center, a Washington think tank.

Even before Erdogan's post-coup crackdown, relations with the West were tricky.

As operations against ISIS kicked off in 2014, Turkey refused to allow strike operations from Incirlik, only to relent a year later by allowing coalition operations from the base. Ankara also was frequently accused of turning a blind eye to ISIS fighters passing through en route to Syria.

In 2003, Turkey refused to allow U.S. forces to go through the country into northern Iraq at the start of the Iraq War, forcing troops to reroute despite the U.S. spending millions of dollars to upgrade roads and bridges for their passage, Wald said.

"We had already put in \$350 million worth of infrastructure in there," Wald said. "That is not a very well-known fact but we at EUCOM managed that." The U.S. military was forced to fight the war without access to Turkey, he said.

Now, after more than a decade in power, Erdogan is emboldened and more unpredictable, Wald said.

"I think it is time for us to start having a mature conversation in relation to Turkey and our expectations of them in being a good partner," he said. "It is time for us to show them that they don't have special leverage."

https://www.stripes.com/news/concerns-raised-over-military-presence-nukes-stored-in-turkey-1.479940#.WXIYSmRSxTY

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TASS (Moscow, Russia)

Russia Shared With US Data Indicating North Korea's Missile Was Not Intercontinental

Author Not Attributed

July 21, 2017

"But the Americans say they have their own calculations," Russia's top diplomat noted

Moscow shared with Washington data indicating that North Korea's missile test-launched in early June was not an intercontinental missile, Russian Foreign Minister Sergey Lavrov said in an interview with NBC on Friday.

When asked whether the crisis on the Korean Peninsula could be resolved through the regime change, he answered in the negative. "We don't believe in regime change anywhere," he stressed.

"I hear very enthusiastic voices in the United States, including in some parts of this administration, that the patience has been over and they must do something because the threat is growing and growing and an intercontinental ballistic missile was launched," Lavrov said, adding that, according to Russia's data, the missile was not intercontinental.

"By the way, we provided to the US on that very day when the presidents met in Hamburg, our military provided to the Pentagon our objective data we received from our radars located just on the border with North Korea. And, according to that data, it is not an intercontinental missile," he said. "But the Americans say they have their own calculations."

He also stressed that Russia has supported all United Nations Security Council resolutions geared to freeze North Korea's nuclear program. He reminded that initially the sanctions were meant only against those who are linked with the development and financing of the nuclear program. However, further sanctions seemed to target the entire North Korean economy by banning all imports to and exports from the country and prohibiting all contacts with North Korean leaders. Russia, in his words, cannot support such approach.

Korean Central Television (KCTV) said on July 4 the country had successfully launched its first-ever intercontinental ballistic missile Hwasong 14. The missile reached an altitude of 2,802 kilometers and flew 933 kilometers within 29 minutes. The Pentagon confirmed the missile had been intercontinental, while Russia's Defense Ministry said the missile's performance indicated that it was an intermediate-range missile.

Controversy over the type of North Korea's missile continued at the emergency meeting of the United Nations Security Council on the following day. Russia's position voiced by deputy Representative to the United Nations Vladimir Safronkov came under criticism from his US colleague, Nikki Haley who said she was ready to provide US intelligence data to prove that it had been an intercontinental missile.

On the same day, Russia and China came up with a joint initiative aiming to reduce tensions on the Korean Peninsula. They called on North Korea to freeze its nuclear program in exchange for the United States' and South Korea's suspension of joint military drills. The initiative however won no support from the United States.

http://tass.com/politics/957331

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MIDDLE EAST

RT (Moscow, Russia)

Britain Wanted to Threaten Saddam's Iraq With Chemical Weapons

Author Not Attributed

July 21, 2017

Margaret Thatcher, Britain's former prime minister, wanted to threaten the deposed Iraqi President Saddam Hussein with chemical weapons before the Gulf War, documents show.

The newly-released papers show that Thatcher was keen to scare Saddam with the threat of weapons of mass destruction (WMD) after he invaded Kuwait in 1990.

The plan was eventually headed off by the US, in particular by then-Defense Secretary Dick Cheney, who later became a key architect of the 2003 Iraq War.

The 'Iron Lady' reportedly told then-US President George Bush Sr that faced with Saddam's aggression it was "no time to go wobbly" as the Western powers postured for a war with Iraq.

Records show that in a meeting in October 1990, amid fears that Saddam could use chemical weapons himself, Thatcher told Cheney: "We had to decide what our response would be. If we wished to deter a CW [chemical weapons] attack by threatening to retaliate in like manner, we must have CW weapons [sic] available."

Cheney responded that Bush had a "particular aversion to chemical weapons" and was disposed towards a "massive conventional response to a CW attack" rather than a like-for-like WMD battle.

The exchanges, which were not included in Thatcher's memoirs, show that her threat at the time to use nuclear weapons was a bluff.

Cheney asked if she "could contemplate the use of nuclear weapons in a Gulf conflict."

"The prime minister said she would be most reluctant to consider this, indeed she would rule it out, although nuclear weapons were always there as the ultimate deterrent."

Strikingly, as with Labour PM Tony Blair over a decade later, Thatcher would try and keep her own cabinet out of the loop about the coming war.

In one memo she wrote: "The fewer the people who know, the better. We have bad experience of secret papers leaking."

https://www.rt.com/uk/396969-thatcher-chemical-weapons-saddam/

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Tehran Times (Tehran, Iran)

Rouhani Downplays New U.S. Sanctions, Threatens Retaliation

Author Not Attributed

July 26, 2017

In a cabinet session on Wednesday, President Hassan Rouhani downplayed the new U.S. sanctions against Iran, asserting the move will fail to shatter the Iranians' confidence.

"Such sanctions have no influence on the Iranian nation... Neither do the sanctions reduce the resistance of the people and the Islamic Republic of Iran nor do they change our policies," Rouhani asserted.

Rouhani's comments followed a bipartisan bill on Tuesday afternoon by the U.S. House of Representatives that includes new sanctions against Russia, Iran, and North Korea. The bill sailed through on a 419-3 vote.

The legislation moves to the Senate, but it's unclear when the Senate will vote on the measure.

The bill also allows Congress to block President Trump from vetoing the legislation because it has already been passed by veto-proof margins.

"This is a strong, bipartisan bill that will increase the United States' economic and political leverage," Rep. Ed Royce, who heads the House Foreign Affairs Committee, told reporters on Tuesday.

In addition to a reprimand for Russian interference in the U.S. 2016 election and a punishment for North Korea, the Iranian portion of the measure introduces new economic sanctions against Tehran over its ballistic missile program and what Washington calls the country's "destabilizing role".

Iran denies it intervenes negatively in the Middle East, and unlike Washington, says its missile program does not violate UN Security Council 2231 which endorses an international nuclear deal with six world powers, including the U.S.

The resolution "calls upon" Iran not to "undertake any activity related to ballistic missiles designed to be capable of delivering nuclear weapons, including launches using such ballistic missile technology".

Iran has carried out several missile launches since the signing of the nuclear deal in 2015 which removed sanctions against Tehran. On the missile-related sanctions, Rouhani said Iran keeps upgrading its "defense capability."

'U.S. should learn from successive failures'

Rouhani, who will be inaugurated on August 5 for a second four-year term, said, "Without regard to their sanctions and policies, we continue our path."

Rouhani also stressed that Tehran will take any measure to shore up the country, urging Washington to learn from "successive failures" in the past.

"We take whatever measures deemed necessary to strengthen the country," he emphasized.

Iran says new sanctions can hurt nuclear deal

Tehran has warned the new sanctions may endanger the nuclear accord, now into its third year.

In a statement on Wednesday, Iran's Foreign Ministry denounced Washington for the move, saying Washington is not keeping its end of the bargain as required by the nuclear accord.

"The U.S. House of Representatives, with the adoption of these non-nuclear sanctions, and in the event of its finalization and implementation, has ignored and threatened the implementation of a multilateral and international agreement that is the result of efforts made in several years," Foreign Ministry spokesman Bahram Qassemi said.

Qassemi noted that Washington is obligated to fulfill its commitments under the Joint Comprehensive Plan of Action, the official name for the nuclear accord.

"A country's domestic laws and legislations cannot be used as a pretext for governments to evade their international responsibility," he asserted.

Since Tehran has been in full compliance with its commitments as acknowledged by the IAEA and the 5+1 group, it expects other signatories to comply with their commitments, the official stated.

He also said Iran would take reciprocal actions against the move.

Qassemi also said Iran will not compromise on its defense capability. "Nothing can prevent the Islamic Republic from pursuing and implementing the principled policy of increasing its defense capabilities."

The Foreign Ministry spokesman also faulted the U.S. for the spread of terrorism in the region and beyond.

"The U.S. congressmen accuse Iran of destabilizing the region while their government, by invading Iraq, had a key role in creating such terrorist groups as ISIS. The increase of instability and the current extremism in this region are the results of the unconsidered and irresponsible policies of this country and its regional allies," he explained.

Iran will respond firmly to U.S. 'hostile' move

Tehran will respond "firmly" to the move which is a "clear hostile action", Deputy Foreign Minister Abbas Araqchi said, adding "practical measures" will be taken in this regard.

The top diplomat who was heavily involved in the talks to clinch the nuclear agreement noted that while the new sanctions are not related to the nuclear sphere, the act can negatively influence the successful implementation of the deal.

The deal requires Washington to implement the agreement with "good will" and in a "constructive atmosphere" and to avoid taking any action that prevents a successful implementation of the accord.

"During the past six months, the new U.S. administration has certified Iran's commitment to the JCPOA for two times as it had no other choice because the International Atomic Energy Agency has issued seven reports which clearly confirmed that Iran has abided by the deal," he explained.

President Trump agreed on July 18 to recertify that Iran is complying with the nuclear agreement.

According to Reuters, Trump said on Tuesday that Tehran should adhere to the terms of the nuclear deal or else face "big, big problems".

He told the Wall Street Journal on Tuesday he would be surprised if Iran is in compliance with the nuclear deal when recertification comes up again in three months.

Araqchi, the deputy foreign minister for legal and international affairs, said Trump's threatening words will not be materialized.

"However, we will wait and take practical measures regarding their moves."

Trump has taken a tough stance against Iran since he took the helm at the White House on January 20. During his presidential campaigns, he vowed to tear up the nuclear agreement, though later he said it would be difficult to annual a deal backed by the UN Security Council.

In an interview with CNN's Fareed Zakaria earlier this month, Iran's Foreign Minister Mohammad Javad Zarif said "the United States has failed to implement its part of the bargain," citing the fact that Trump "used his presence in Hamburg during the G20 meeting in order to dissuade leaders from other countries to engage in business with Iran."

Parliament speaker says commensurate measures underway

Reacting to the sanctions bill, Parliament Speaker Ali Larijani pointed out that lawmakers are closely monitoring all moves by the U.S., saying Iran and will make swift decisions accordingly.

"We have the capability to [adopt] many measures proportional to the Americans' conduct," Larijani told reporters on Tuesday.

He added that the Iranian legislators would discuss U.S. moves at various committees of the parliament and would immediately examine them at the floor.

He said the legislation indicated that Washington has failed to fulfill its obligations under the landmark nuclear agreement.

The top parliamentarian said American officials wrongly assume that it will be beneficial to them if they breach the JCPOA, adding that this would be detrimental to them.

"We have good nuclear potential and can change the situation immediately," Larijani pointed out.

On Tuesday, Larijani said Iran can "limit" the International Atomic Energy Agency's monitoring activities of its nuclear program if Washington thinks they are not enough.

He also noted that if the deal fails, it is Washington who would suffer the greatest.

http://www.tehrantimes.com/news/415403/Rouhani-downplays-new-U-S-sanctions-threatensretaliation

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Arutz Sheva (Beit El, Israel)

ISIS Had 'Perfect' Ingredient to Build Huge Dirty Bomb in Mosul

By Mordechai Sones

July 24, 2017

Iraqi forces find unused cobalt-60 machines after taking back city, ISIS failed to discover.

ISIS terrorists nearly stumbled on the main ingredient for a "dirty bomb" when they overran Mosul in 2014, reports the Mail Online.

twitter.com/USAF_CUWS | cuws.au.af.mil // 41

Two caches of cobalt, a metallic substance with lethally high levels of radiation, were found inside two radiotherapy machines at the University of Mosul.

Iraqi forces found the cobalt-60 machines had not been touched when they liberated the city this month.

A Health Ministry official said of ISIS: "They are not that smart."

Western intelligence agencies were supposedly aware of the cobalt and monitored for three years for any signs ISIS might try to use it.

Cobalt is used to kill cancer cells when it is contained within the heavy shielding of a radiotherapy machine.

However, in terrorist hands, cobalt could have been used to create a "dirty bomb."

Fears were intensified in late 2014 when ISIS claimed it had obtained radioactive material and then again last year when they seized laboratories at the same Mosul college campus with the apparent goal of building new weapons.

A November 2015 draft report found that the radioactive cores of the material, when new, "contained about nine grams of pure cobalt-60 with a potency of more than 10,000 curies — a standard measure of radioactivity."

A person standing three feet from the unshielded core would receive a fatal dose of radiation in less than three minutes, the Washington Post reported.

US officials have requested their current location not be disclosed.

It is unclear why ISIS failed to take advantage of the cobalt stored at the Mosul college campus.

Nuclear experts suggest they may have been concerned about how to remove the machines' thick shielding without exposing themselves to deadly radiation.

A "dirty bomb" made from cobalt could have resulted in "panic and an expensive disruptive cleanup", David Albright, a nuclear weapons expert and former UN weapons inspector told the Washington Post.

He added: "There would likely not have been that many deaths, but the panic could have been profound, leading to the emptying of parts of the city as residents fled, fearful of the effects of radiation."

ISIS insurgents seized control of Mosul in the summer of 2014.

The east side of the city was recaptured by Iraqi fighters in January this year, though the west side of the city took far longer.

An aerial bombardment on the west, which includes the Old City, started in February and lasted until early July.

ISIS fighters had turned the city into a fortress, holding tens of thousands of civilians as human shields.

Iraqi forces often turned to artillery and US-led coalition airstrikes. The Old City was the last battlefield.

http://www.israelnationalnews.com/News/News.aspx/232922

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The Times of Israel (Jerusalem, Israel)

Iran Announces Production of New Air Defense Missile

Author Not Attributed

July 22, 2017

State TV claims 'completely indigenous' Sayyad-3 an upgrade over previous version of air-to-surface missile

Iranian state TV on Saturday reported the inauguration of a production line for a new version of an air defense missile.

The report said the missile dubbed Sayyad-3 is an upgrade to previous versions of the missile. Sayyad means "hunter" in Farsi.

The country's air defense chief, Brig. Gen. Farzad Esmaili, said during a ceremony that the missile is "a completely indigenous technology."

Iran occasionally announces production of sophisticated homegrown weapons that cannot be independently verified.

Iran announced in December it test-fired Sayyad-3. Its range is 120 kilometers (some 75 miles) and is capable of hitting targets at altitudes of up to 27 kilometers (17 miles).

In 1992 Iran began a military self-sufficiency program under which it produces mortars to missiles and tanks to submarines.

In addition to the Sayyad class of surface-to-air missiles, Iran also possesses the advanced S-300 air defense system, which it acquired following the July 2015 nuclear deal after years of delay.

Iran had been trying to acquire the system for years to ward off repeated threats by Israel to bomb its nuclear facilities, but Russia had held off delivery in line with UN sanctions imposed over the nuclear program.

In March, Iranian state TV announced that the system is now operational.

Last August, state television aired footage of the system being installed around the Fordo nuclear site in a mountain near Qom, south of the capital.

The missile defense system is considered to be one of the most advanced of its kind in the world, offering long-range protection against both aircraft and missiles.

Israel had long sought to block the sale, which analysts say could impede a potential Israeli strike on Tehran's nuclear facilities. Other officials have expressed concern that the systems could reach Syria and Hezbollah, diluting Israel's regional air supremacy.

The Israeli Air Force has trained for a scenario in which it would have to carry out strikes in Syria or Iran on facilities defended by the S-300.

In a 2015 interview, IAF commander Maj. Gen. Amir Eshel said the S-300 was a "significant but not insurmountable challenge" for the IAF.

http://www.timesofisrael.com/iran-announces-production-of-new-air-defense-missile/

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INDIA/PAKISTAN

News.com.au (Surry Hills, Australia)

Warnings of a 'Chance Of War' Between India and China as Nuclear Rivals Face Off

By Benedict Brook

July 17, 2017

ASK most people to name a current crisis between nuclear armed states and North Korea and the US' rapidly worsening relations would come to mind.

But there's another skirmish happening between two nuclear nations and both have far more fully functioning missiles, poised and ready to fire, than Kim Jong-un could even dream off.

Ten thousand feet above sea level, in the sub zero cold of the Himalayas, things could be about to turn hot.

Since mid-June, Chinese and Indian soldiers have lined up "eyeball to eyeball" on the remote Doklam plateau. In recent days, more troops have been sent to the frontline.

Currently it's a nonlethal battle of platitudes at altitude, but commentators in China have warned, "there could be a chance of war".

And that's not a great prospect, given India is thought to have more than 100 nuclear tipped missiles while China's warheads could total more than 250.

The flashpoint between the two seems mundane ——the building of a new road on the Chinese controlled, but disputed, plateau. But the last time the two went to war, half a century ago, it was also over a road.

There is now said to be "complete stalemate" in the confrontation.

CONFLICT AT THE CHICKEN NECK

China and India have regularly come to blows on their 4000km long and infuriatingly ill-defined border. Remote and treacherous, few people live in these disrupted areas. But any moves to tame them such as, say, through the building of a road to make access easier, immediately risks a conflict.

The current anger kicked off in an area close to what India calls the "chicken neck" — a thin stretch of land that is the only direct link to country's isolated north east.

Directly to the north is China, peering down from the mountains, covetous for some of the land it overlooks.

In early June, China commenced construction of a new road leading to the Doklam plateau, a disputed area it currently administers. It is close to the chicken neck at the so-called "tri junction" where its frontier meets both India and the tiny mountain kingdom of Bhutan.

China accuses Indian troops stationed in Bhutan — which only has a small army and relies militarily on India — from straying across the frontier to prevent the road's construction.

On Monday, China's state news agency, Xinhua, said the Indian military's "trespass into Chinese territory is a blatant infringement on China's sovereignty".

However, Bhutan says it is the rightful owner of the plateau.

While Bhutan is part of the stoush, the real battle of wills is between China and India which cite different treaties to back up their various claims to land along the frontier.

And these are no mere scraps of mountain here and there. India claims 250,000 square kilometres of Chinese controlled land while China says 550,000km sq of Indian administered land should belong to them.

LINE OF ACTUAL CONTROL

"The failure to demarcate the China-India border has led to overlapping perceptions of where the so-called Line of Actual Control lies, guaranteeing rival border patrols will run into each other and force the issue," Tsering Topgyal, an international relations expert at the University of Birmingham wrote in The Conversation in 2014.

On Tuesday, the Times of India said around 300-400 Indian troops were "eyeball to eyeball" with China in a "non-aggressive confrontation" but thousands more soldiers from both sides are close by. A further 2500 Indian troops has now been stationed in India's Sikkim province, the province next to the tri point.

'GRAVE SITUATION'

The Indian External Affairs Ministry has justified the build up, saying a 2012 agreement meant the frontier at the tri-junction would be finalised between the three countries. Any attempt to unilaterally determine the tri-junction points is a "violation of this understanding", the statement said, reported the Hindustan Times.

India sees the road as China asserting sovereignty.

Last week, China's ambassador to New Delhi, Luo Zhaohui, said the situation was "grave" and Indian troops should "unconditionally pull back to the Indian side".

"India, who calls Bhutan an 'ally', said it had intervened on behalf of its neighbour, yet the true subtext is the South Asian giant wants to maintain and expand regional hegemony" thundered Xinhua.

But India might scoff at China lecturing it on regional hegemony.

Beijing has been widening its influence across the Indian subcontinent, funding big infrastructure projects in Pakistan, Bangladesh and Sri Lanka.

A maritime analyst said Delhi is increasingly worried.

"That means India is in some ways going to be surrounded by Chinese infrastructure projects. The fear is these Chinese ports could later be used for maritime and naval deployments," Abhijit Singh of the Observer Research Foundation told the ABC.

In 1962, China and India's border brinkmanship tipped over into war. More than 700 Chinese troops and 4000 Indian soldiers died before Beijing declared a ceasefire and victory.

That dispute began with the building of a Chinese road on disputed land but much farther west in Kashmir.

Earlier this month, China's Global Times cited domestic security experts as saying that "there could be a chance of war if the recent conflict between China and India is not handled properly.

"China will resolutely defend its territory and safeguard the border."

But when it comes to the border squabble close to the chicken's neck, India is itself playing chicken.

Indian defence minister Arun Jaitley has a dark warning for China.

"The situation in 1962 was different and India of 2017 is different."

The main difference is the India of 1962 did not have an arsenal of nuclear weapons. It has them now.

http://www.news.com.au/world/asia/warnings-of-a-chance-of-war-between-india-and-china-asnuclear-rivals-face-off/news-story/325ace8a2957aeb6a3634db44a4c12e9

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Catch News (New Delhi, India)

Kargil Vijay Diwas: Did Pakistan Plan to Drop Nuclear Bomb On India During Indo-Pak War?

Author Not Attributed

July 25, 2017

Kargil War came to end on 26 July 1999 and the day was recorded as the historic day for India and it is observed as Kargil Vijay Diwas. The Kargil war took place along the Pakistan-India Line of Control (LOC) in Ladakh, in the northern Indian state of Jammu and Kashmir. The war was fought for two months and finally, the fight ended with a ceasefire on this day, 18 years back.

The day is observed as a mark of victory and to commemorate the sacrifices made by the war heroes.

Over the years, several untold stories have caught people's attention and one particular story about Pakistan's secret plan during the war stands out among all those tales.

According to a former top White House official, Pakistan planned to deploy nuclear weapons against India during the 1999 Kargil War. This information was revealed by former CIA analyst, Bruce Riedel.

According to the report, CIA had warned the then US President Bill Clinton about the Pakistan plan of dropping nuclear bomb on India.

Mr Riedel wrote that, "The morning of the Fourth, the CIA wrote in its top-secret Daily Brief that Pakistan was preparing its nuclear weapons for deployment and possible use."

He also told the President that the war was started because of the Pakistan and it should be ended by Pakistan only without any compensation. He cleared that Pakistani withdrawal could avert further escalation.

http://www.catchnews.com/entertainment-news/valerian-movie-review-1000-planets-but-noroom-for-a-plot-74147.html

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The Hindu (New Dehli, India)

'Pentagon Responsible For S. Asian Nuclear Situation'

By Varghese George

July 20, 2017

Pak. is a state sponsor of terror, says former Senator Pressler

It is the faulty policy of continuous U.S. support to Pakistan's military generals that has turned South Asia into a nuclear flashpoint, former U.S. Senator Larry Pressler has said. Mr. Pressler, known for the legislation that forced President George H.W. Bush to suspend aid to Pakistan in 1990, said the U.S. must designate Pakistan as a state sponsor of terrorism. The Pressler twitter.com/USAF_CUWS | cuws.au.af.mil // 46 amendment required the President to certify annually that Pakistan did not possess a nuclear device.

Mr. Pressler spoke to *The Hindu* in an interview, coinciding with the launch of his book *Neighbours in Arms: An American Senator's Quest for Disarmament in a Nuclear Subcontinent*, by Penguin Random House. The former Senator said the Pressler amendment was diluted and finally scrapped, as the arms manufacturing lobby and the U.S. Defence Department wanted supplies to continue. Holding the Pentagon responsible for the nuclear situation in South Asia, Mr. Pressler said: "I don't think either Pakistan or India would have gone ahead with nuclear weapons if we were sincere about non-proliferation."

Mr. Pressler said the U.S. political and administrative system is in the grip of the 'military industrial complex'. He terms it the 'octopus' with its tentacles all over. "Pentagon is the most powerful part of the U.S. government. It is not only the Pentagon, but it is the arms construction business, law firms... it permeates all over. Secretary of Defense is not only a person, he is a system. When he goes to the Hill, he gives in to pressure from members of Congress. For example, Alan Cranston, a liberal from California, was a great champion of B-1 bombers, which I don't think he ever believed in. That was about jobs in Los Angeles."

He added: "This is not all bad. This is almost like a public works programme. Some people have said, our economy needs large public works programme and building arms is one such. It is also about national security. Lots of citizens support this, because of security concerns."

Continuous warfare

Mr. Pressler said American foreign policy has been a continuous warfare for several decades now. "The Pentagon and their allies are for arming everybody. I can't say the Pentagon gave Pakistan the nuclear weapons directly, but they could have stopped it easily," he said, adding that American generals preferred to deal with dictatorships rather than a democracy like India.

The former Republican senator who endorsed Hillary Clinton in the 2016 presidential election is of the opinion that President Donald Trump and Prime Minister Narendra Modi could make good partners, but pointed out that "India has fallen into the same trap" of endless arms purchase from the U.S. "I am very saddened that a great part of the so-called great new relationship is military sales relationship. President Trump has spoken about all these American jobs because of these arms going to India..." He said India-U.S. ties have a bright future "but we (the U.S.) have to recognise that India is our friend, India is our soulmate."

Super alliance

"We tear India down when our generals fly down there and encourage the ISI (Pakistan's intelligence service). We need to stop doing that. We need to create a super India-U.S. alliance, one that is based on trade and development, and not based on arms trade," he said.

Asked about his observation in the book that Mr. Modi has learnt to deal with the American system, Mr. Pressler said: "I am very hopeful about Modi. He seems to be much more flexible than I had expected. Modi is a phenomena to me, in the sense that... he was barred from entry to the U.S. — unfairly — when he was chief minister. There is a possibility that Trump is not hidebound by any previous thoughts. He could be the man who could change things. I am hopeful," he said. According to Mr. Pressler, the appointment of Lisa Curtis as Senior Director for South and Central Asia at the National Security Council by Mr. Trump is indicative of fresh thinking. "She has got this thing... terrorism and South Asia figured out."

http://www.thehindu.com/news/international/pentagon-responsible-for-s-asian-nuclearsituation/article19318752.ece

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The Mainichi (Tokyo, Japan)

Interview: Ex-Pakistani Pres. Musharraf mulled using nukes against India after 2001 attack

Author Not Attributed

July 26, 2017

Ahead of the 70th anniversary of the partition and independence of India and Pakistan, former Pakistani President Pervez Musharraf responded to an exclusive interview with the Mainichi Shimbun here in Dubai.

In an extremely rare move, the former leader of the nuclear-armed state admitted to a specific instance in which he'd considered the use of nuclear weapons. He revealed that amid tensions between India and Pakistan following the 2001 terrorist attack on the Indian Parliament, he contemplated the use of nuclear weapons, but decided against doing so out of fear of retaliation. His disclosure brings the potential for conflict between India and Pakistan to spark nuclear war into sharp relief.

When the attack on the Indian Parliament took place in December 2001, India accused a radical Islamist group of mounting the attack with the assistance of the Pakistani military intelligence agency. Both India and Pakistan mobilized a total of approximately 1 million army, navy and air force troops to the border, after which a standoff continued until around October 2002.

Musharraf told the Mainichi that when tensions were high in 2002, there was a "danger when (the) nuclear threshold could have been crossed." He also recalled that he had many sleepless nights, asking himself whether he would or could deploy nuclear weapons. At the time, he had publicly said that he would not rule out the possibility of using nuclear weapons, and his testimony points to the fact that it had indeed been a realistic option, not just a diplomatic feint.

Musharraf also said, however, that at the time, neither India nor Pakistan had nuclear warheads on their missiles, so it would have taken one to two days to make them launch-ready. Asked whether he had ordered that missiles be equipped with nuclear warheads and put into firing position, he said, "We didn't do that and we don't think India also did that, thank God" -- pointing, perhaps, to a fear of retaliation that applied psychological brakes on both sides. The two countries subsequently avoided an all-out clash and tensions subsided.

After India tested nuclear weapons in 1998, it adopted a "no-first-use (NFU)" policy in 1999. Pakistan, meanwhile, has not ruled out the possibility of a pre-emptive nuclear attack. This is believed to be the reason why India, following the 2001 attack on its parliament, immediately launched limited attacks on cross-border terrorism by Pakistan to avoid giving the latter any time to use its nuclear weapons. Pakistan has responded to this by developing tactical nuclear weapons.

In November 2016, India's then defense minister, Manohar Parrikar, stated that India would not be tied down to its NFU policy, escalating debate in favor of a nuclear deterrence theory. Musharraf says raising tensions in such ways is extremely dangerous, by pointing to mutually assured destruction -- the notion that the use of nuclear weapons will not stop after the first one, and will eventually result in the complete destruction of all parties involved.

Musharraf rose to the post of Chief of Army Staff, Pakistan's top military post, in 1998. He staged a coup d'etat in October 1999, ousting then Prime Minister Nawaz Sharif, and took the reins of government. He served as president from 2001 to 2008.

https://mainichi.jp/english/articles/20170726/p2a/00m/0na/018000c

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COMMENTARY

Business Insider (New York, NY)

3 Reasons Why America's Massive Nuclear Arsenal Actually Makes the World Safer

By Adam Lowther

July 21, 2017

As a father of two young children, I am often perplexed when I hear senior leaders from the Department of Defense speak before civilian and military audiences and say something like, "If I could uninvent nuclear weapons, I would. But since we can't put the genie back in the bottle, we must maintain a safe, secure, and effective nuclear force."

What makes this statement so perplexing is that creating a world free of nuclear weapons wouldn't ensure my son and daughter live in a world safe from the great power wars that killed eighty million people between 1914 and 1945.

During World War II alone more one million people died per month because of the war.

For those critics of nuclear weapons who argue that the world would be safer if we put the genie back in the bottle, the historical record presents a number of inconvenient truths that they cannot overcome.

Nuclear weapons save lives

Since 1945, nuclear weapons have eliminated great power wars, saving the lives of untold millions. This is because a conflict between nuclear armed states has the potential to escalate to a nuclear conflict. Fortunately, the leaders of nuclear powers are not only unwilling to go to war, but they go to great lengths to constrain their allies and partners from engaging in conflicts that might eventually drag them in a conflict with another nuclear armed state.

The net effect of this risk averse behavior is that there has been an approximately ninety percent reduction in conflict related deaths over the last seven decades. This is not to say that all conflict has disappeared. It has not. What it does mean is that the wars that are fought are on a much smaller scale and are much less costly in blood and treasure. This is very good news for parents like me who would be expected to send their sons and daughters to fight in the next great power war.

Modernizing the nuclear triad is necessary

Nuclear deterrence only works if an adversary believes the other side has the capability and will to use its weapons. For the United States, both have eroded over the past two decades. During the Cold War, the United States replaced its arsenal about every ten to fifteen years.

However, when the Soviet Union collapsed, President George H. W. Bush cancelled the modernization programs that were set to replace both weapons and delivery vehicles designed and fielded in the 1960s and 1970s. Twenty five years later, those same weapon systems are still defending our families and deterring our adversaries.

The problem with our current nuclear arsenal is that it was never designed to last five, six, or seven decades. Not only is the technology outdated, but keeping these weapons functional is becoming increasingly difficult.

What is even more dangerous are the developments taking place in Russia and China where they are, for example, replacing their 1970s era intercontinental ballistic missiles (ICBM) with modern ICBMs that are more capable—putting American families at greater risk?

In fact, our adversaries are modernizing every aspect of their nuclear triads. And in the case of Russia, they have a modernized triad which they can use as part of their "first use" policy, which allows for a first strike as part of Russian nuclear doctrine.

Ensuring the continued credibility of deterrence depends on the nation placing the necessary value on nuclear modernization. It is really that simple.

The nuclear arsenal is cheap

Without question, the nuclear arsenal is the most cost effective component of our national defense. Currently, American taxpayers spend about \$25 billion per year on nuclear weapons and operations. That is less than five percent of the defense budget and less than half of one percent of the federal budget. At the height of modernization, that cost will rise to seven percent of the defense budget.

When you compare what Americans spend on sovereignty insurance, which is what nuclear weapons are, you will find that they are the most inexpensive form of insurance we can buy. For example, the average American taxpayer spends about \$225 per year on the nuclear arsenal (sovereignty insurance), while at the same time they spend an average of about \$1325 on auto insurance and \$12,000 on health insurance.

What many American do not realize is that the money we spend on the nuclear arsenal allows us to spend less money on national defense and more money on new cars and better healthcare. Because nuclear weapons deter our adversaries from attacking the United States, we are able to redirect our hard earned money to areas that allow us to better take care of our families.

Conclusion

When it comes to nuclear weapons, I am very thankful that they were invented. Neither my father nor I fought the Soviets in World War III. It is my hope that Americans will continue to see the value of nuclear weapons in ensuring peace and will guarantee that we have a nuclear arsenal second to none. I have devoted my life to that mission because I believe it is a crucial way to ensure the safety of my children.

http://www.businessinsider.com/3-reasons-why-americas-massive-nuclear-arsenal-actuallymakes-the-world-safer-2017-7

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Albuquerque Journal (Albuquerque, New Mexico)

New Nuclear 'Pit' Production at LANL is Unnecessary

By Jay Coghlan

July 21, 2017

The Center for Public Integrity recently published a series of articles on nuclear safety lapses in plutonium pit production at the Los Alamos lab that captured a lot of national attention.

Plutonium pits are the fissile cores of nuclear weapons that initiate the thermonuclear detonation of modern weapons. The articles were largely based on the National Nuclear Security Administration's annual contractor Performance Evaluation Reports. Those reports are publicly available only because Nuclear Watch New Mexico successfully sued for them in 2012.

The former plutonium pit production site, the Rocky Flats Plant near Denver, was shut down by a 1989 FBI raid investigating environmental crimes. A special grand jury indicted both Department of Energy (DOE) officials and the contractor, but a federal judge quashed the indictments at the urging of the local federal attorney general. It was only by sheer luck that a major plutonium fire on Mother's Day 1969 didn't contaminate Denver with highly carcinogenic plutonium.

I specifically recall senior DOE officials promising New Mexicans 20 years ago that serious lessons were learned from Rocky Flats and that re-established plutonium pit production at the Los Alamos National Laboratory (LANL) would always be safe. Since then, the lab has spent billions of taxpayers' money on plutonium pit production but, as the recent articles document, LANL still can't do it safely.

As the articles reported, a serious nuclear criticality accident was narrowly averted in July 2011, which resulted in the three-year shutdown of LANL's main plutonium facility. Nevertheless, according to the fiscal year 2011 LANL Performance Evaluation Report, the lab contractor was paid \$50 million in pure profit for that year.

In 2014, a radioactive waste barrel improperly prepared by LANL ruptured underground at the Waste Isolation Pilot Plant (WIPP), shutting down that multi-billion-dollar facility for nearly three years. Radioactive waste disposal at WIPP will remain constrained for years, raising the question of where future LANL bomb-making wastes will go.

Congress has required the Los Alamos lab to quadruple plutonium pit production, regardless of the technical needs of the stockpile. The requirement was drafted by professional staff on the House Armed Services Committee, one of whom was originally from the Sandia nuclear weapons lab.

That the existing stockpile doesn't need pit production is demonstrated by the fact that none has been scheduled since 2011 when LANL finished up the production run that was stopped when Rocky Flats was shut down.

At NukeWatch's request, former U.S. Sen. Jeff Bingaman (D-NM) required an independent study of the lifetimes of pits. The expert conclusion was that plutonium pits last at least a century, more than double government estimates (the oldest pits in the stockpile are now around 45 years old). Moreover, there are some 20,000 existing plutonium pits stored at the Pantex Plant near Amarillo, Texas.

Future plutonium pit production is for a new so-called "Interoperable Warhead" that is supposed to function both as a land-based ICBM and a sub-launched nuclear warhead. The nuclear weapons labs are pushing this \$13 billion make-work project that the Navy doesn't want.

Ironically, new-design pits for the Interoperable Warhead may hurt national security because they cannot be tested in a full-scale nuclear weapons test or, alternatively, testing them would have severe international proliferation consequences.

Given all this, why expand plutonium pit production when apparently it can't be done safely and may decrease, not increase, our national security? One strong reason is the huge contractor profits to be had under the \$1 trillion-plus "modernization" of the nuclear weapons stockpile and production complex started under Obama, which Trump promises to expand. Far from just "modernization," existing nuclear weapons are being given new military capabilities, despite denials at the highest levels of government.

The directors of the Livermore, Sandia and Los Alamos nuclear weapons labs in truth wear two hats – the first as lab directors, the second as presidents of the for-profit limited liability corporations running the labs. This inherent conflict of interest skews U.S. nuclear weapons policy and should be brought to an end.

The New Mexico congressional delegation kowtows to the nuclear weapons industry in our state. I specifically call upon Senators Tom Udall and Martin Heinrich to certify within this calendar year that future plutonium pit production at the Los Alamos Lab will be safe, or otherwise end their support for it.

https://www.abqjournal.com/1036069/new-nuclear-pit-production-at-lanl-is-unnecessary.html

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RealClearDefense (Chicago, IL)

Creating an Invincible Military

By David Leffler

July 25, 2017

Our U.S. Air Force is the best in the world. This excellent editorial "The future of the Air Force" shows there is more our Air Force can do to remain the best.

Leaders at the Air University at Maxwell Air Force Base would be judicious to incorporate Invincible Defense Technology (IDT): a revolutionary human resource technology that would empower our military personnel to harness their full potential.

IDT is currently deployed by militaries worldwide. Several Latin American countries are now employing this innovative approach, based on the success of the 15,000 members of the Navy, Air Force, Army, and Secret Service of Ecuador. Also, an IDT pilot project was instituted by Brazil's elite military police force shortly before the Olympics to improve performance and prevent terrorism.

Sadly, while the pioneering leaders in other nations are already utilizing IDT to achieve an ideal state of invincibility, this Revolution in Military Affairs (RMA) has gone largely unnoticed by U.S. policy makers. These foreign leaders have recognized the validity of IDT as an excellent, cost-effective way to create a more powerful military ensuring victory.

IDT uses a superior defense system to defeat terrorism and prevent war, for about the cost of one modern fighter jet. IDT has been validated by 23 studies published in peer-reviewed scientific journals. Based on 25 years of research, it has been endorsed by independent scientists and scholars. This human resource-based technology of the unified field, according to quantum physics, works on a level that is 10 to the 14th power stronger than nuclear force.

These foreign militaries have learned how to harness the immense power of this unified field to effectively prevent any enemy from arising within or outside of their countries' borders. Consequently, they are now shifting away from outdated non-unified field-based defense approaches, and are instead focusing on IDT as a preventative peace building measure.

Conflict and terrorism would end rapidly if our military personnel are trained to form prevention wings of the military, comprised of IDT experts practicing the non-religious discipline of transcendental meditation (TM) and the advanced TM-Sidhi program in groups twice a day.

George Will states in his editorial, "The traditional U.S. approach to warfare – dominance achieved by mass of force produced by the nation's industrial might – is of limited relevance ... changing the trajectory of military thinking, and hence procurement often requires changing a service's viscous culture. Hitler was defeated using great violence, but it would be better to architect responses to threats by projecting power in ways that are less expensive and much more efficient than even today's precision-guided weapons ..." IDT effectively meets all these criteria, at a fraction of the cost of all other defense systems. IDT is totally unlike any other defense technology in that it does not use violence to quell violence. IDT has been successfully used during wartime, resulting in a reduction of fighting, reduced war deaths and casualties, and improve progress towards resolving conflict through peaceful means.

It is high collective societal stress levels that ultimately fuel terrorism and war. If dangerous levels of collective stress are reduced by applying IDT, then leaders and citizens will become capable of finding constructive solutions to irresolute issues.

With greater civic calm, citizens' aspirations rise, and more productive and balanced societies emerge. Thus, violence as a means for change or as an expression of discontent naturally subsides.

The powerful IDT human-resource-based defense technology disallows negative trends, thereby preventing enemies from arising.

The ultimate defense is to create no enemies; which means no war or terrorism, and full security with happy and productive lives for everyone.

For these reasons, the IDT approach is advocated by the Global Union of Scientists for Peace (GUSP). This non-profit organization hosted an international conference in Kiev, Ukraine. Renowned Ukrainian leaders Lt. General (Ret.) Vasyl Krutov, former chief of the Ukraine Anti-Terrorism Center as well as Academician Dr. Sergiy Maksymenko, a distinguished Ukrainian research scientist are among the impressive list of participants who spoke at or voiced their support for IDT. Others included: President Joachim Chissano of Mozambique, who applied innovative IDT programs to end their civil war; and retired Ecuadorian Lt. General José Villamil, who also applied IDT to end the war between Ecuador and Peru.

The brave Americans serving in our military are being needlessly killed and wounded in the "War on Terrorism," since conventional approaches do not adequately defend against sudden acts of violence, or eliminate suicide terrorists willing to die for their cause. IDT is a proven approach to end such attacks.

IDT is desperately needed. There is truly no other solution. Air University leaders would be wise to read the GUSP conference proceedings and thereby learn how to establish lasting peace for everyone.

http://www.realcleardefense.com/articles/2017/07/25/creating an invincible military 111887.h tml

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The Hill (Washington, DC)

Time to Change US Approach on the Nuclear Weapons Ban Treaty

By Tytti Erästö

July 23, 2017

In case you haven't yet heard, nuclear weapons will soon be banned by international law. Over 120 countries negotiated a Nuclear Weapons Prohibition Treaty at the United Nations on 7 July. While the negotiators were fervently clapping their hands over what they see as the beginning of the end of nuclear weapons, the response from the nuclear-armed states was deafening silence.

Prior to the negotiations, the United States made little secret of its disdain for the treaty and also pressured allies to oppose it. As that battle is now lost, it would be wise to adjust the strategy based on the old adage: if you can't beat them, join them.

Both the Obama and the Trump administrations have opposed the Prohibition Treaty. A senior official for President Obama characterized the treaty process as "polarizing" and detached from the reality that several countries "count on nuclear weapons as a deterrent." The current U.S. ambassador to the United Nations, Nikki Haley, dismissed the ban as unrealistic, referring to the need to protect "those of us that are good" against bad actors, such as North Korea.

Opposition to the treaty has also united the United States and Russia, which have both portrayed the Prohibition Treaty as a threat to the 1968 Non-Proliferation Treaty (NPT) — the cornerstone of the international non-proliferation regime.

But since the start of the nuclear era, the elimination of nuclear weapons has been a universally shared objective. It has also enjoyed bipartisan support in the United States. Obama's commitment to the long-term vision of a nuclear-free world is well known, but few recall that President Ronald Reagan went even further by pursuing talks with the Soviet Union on the abolition of all of their nuclear arsenals.

Disarmament was also an integral part of the NPT bargain: while the non-nuclear states agreed to remain as such, the nuclear-armed states would pursue "negotiations in good faith on effective measures relating to… nuclear disarmament" — and, eventually, also "on a treaty on general and complete disarmament."

The Prohibition Treaty is thus perfectly in line with the NPT. The same cannot be said of the current policies of the two biggest nuclear-armed states, neither of which is showing serious commitment to nuclear disarmament. The Trump administration seems reluctant to accept a nuclear-free world even as an aspirational goal: it is currently reviewing "whether traditional U.S. fidelity to that visionary end-state of abolition... is still a viable strategy."

Instead of being the cause of the current polarization, the Prohibition Treaty is a symptom of a longheld frustration by the non-nuclear states over the lopsided implementation of what were meant to be reciprocal NPT commitments. At the same time, it is their attempt to rectify what is seen as the increasingly tyrannical and dysfunctional nuclear oligarchy upheld by the nuclear-armed states.

The nuclear-armed states' policy of disregarding the treaty, alongside their disarmament commitments, is therefore bound to create more resistance. Such a policy is symptomatic of a failure to see that the special "great power" status of the five nuclear-armed states has always depended, not only on retaining the monopoly of indiscriminate violence, but also on being regarded as responsible guardians of the global nuclear order.

At present, a logical gesture of accommodation by the United States and other nuclear-armed states would be to welcome the Prohibition Treaty. This should be based on the acknowledgement that the treaty strengthens the non-proliferation norm, which is clearly in U.S. interests: in addition to reaffirming and strengthening their existing commitments not to ever acquire nuclear weapons, the negotiators also took great care to address U.S. concerns about contradictions with the NPT in the treaty text. Although no treaty is perfect, the negotiators deserve credit for having chosen the moral high ground to express their discontent with the existing order.

No one expects the nuclear-armed states to join the treaty in the immediate future. However, they could win the hearts of the ban supporters by simply signaling their intent to do so — or to negotiate an even better agreement based on more stringent verification mechanism — when circumstances allow it in the future.

Of course, this would require the United States to reaffirm that it still subscribes to the shared vision of a nuclear-free world. Regardless of its eventual position on the Prohibition Treaty, this is the minimum that the United States should do for the sake of credibility with its NPT commitments.

Second, the United States should demonstrate political will and creativity to engage in nuclear arms control efforts with Russia. While such cooperation seems difficult in the current situation, progress in nuclear arms control — or even in preserving existing agreements, notably the Intermediate-Range Nuclear Forces Treaty and New START — could redeem the bilateral relationship. In the meanwhile, the United States should cooperate with other countries in developing methods for nuclear disarmament verification.

Like it or not, the Prohibition Treaty is set to become international law, and hence it cannot be ignored into oblivion. The treaty enjoys broad international support, not just among the non-nuclear states but also the global civil society, which finds it increasingly difficult to believe that nuclear disarmament is impossible just because of a few "bad actors." Instead of swimming against the tide of history and global public opinion, the U.S. might find that its own interest in reducing nuclear threats would also be better served by going with the flow.

http://thehill.com/blogs/pundits-blog/defense/343315-time-to-change-us-approach-on-thenuclear-weapons-ban-treaty

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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.

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