



## USAF Center for Unconventional Weapons Studies (CUWS) Outreach Journal

Issue No. 1144, 5 December 2014

Welcome to the CUWS Outreach Journal! As part of the CUWS' mission to develop Air Force, DoD, and other USG leaders to advance the state of knowledge, policy, and practices within strategic defense issues involving nuclear, biological, and chemical weapons, we offer the government and civilian community a source of contemporary discussions on unconventional weapons. These discussions include news articles, papers, and other information sources that address issues pertinent to the U.S. national security community. It is our hope that this information resource will help enhance the overall awareness of these important national security issues and lead to the further discussion of options for dealing with the potential use of unconventional weapons. **All of our past journals are now available at [http://cpc.au.af.mil/au\\_outreach.aspx](http://cpc.au.af.mil/au_outreach.aspx).**

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**FEATURE ITEM:** *“Strategic Stability in the Second Nuclear Age”*. Authored by Gregory D. Koblentz, Associate Professor, School of Policy, Government, and International Affairs, and Deputy Director, Biodefense Graduate Program, George Mason University; published by Council on Foreign Relations Press, November 2014, 67 pages.

<http://www.cfr.org/arms-control-disarmament-and-nonproliferation/strategic-stability-second-nuclear-age/p33809>

Since the end of the Cold War, the nuclear picture has become more complex. To be sure, U.S. and Soviet inventories have come down significantly. But China, long a member of the nuclear club, is now a rising major power, with global interests that cast its nuclear arsenal in a new light. India and Pakistan both possess growing nuclear arsenals. Stockpiles in Europe are shrinking but are still meaningful. Israel, too, possesses a considerable number of nuclear weapons and delivery vehicles, although for its own reasons refuses to confirm this status. North Korea has a small inventory but its erratic behavior makes it more of a concern than the numbers alone would suggest. As Gregory Koblentz writes in this Council Special Report, this second nuclear age—one of more nuclear states connected in myriad ways—will pose more and different challenges to policy-makers than was the case during the Cold War.

Koblentz highlights a number of challenges to strategic stability posed by this new era. The first challenge is that the “security dilemma” of the Cold War, in which actions taken by one state to secure itself made the other feel less secure, has given way to the “security trilemma”: actions taken by one state to protect itself from a second make a third feel insecure. As states see and respond to the actions and perceived intentions of others, this dynamic could ripple through all the world’s nuclear powers, which are connected by different but intersecting deterrence relationships. Technology, too, has the potential to threaten global strategic stability. As conventional weapons become stronger and more accurate, they can threaten even well-protected nuclear stockpiles. And cyberattacks can confuse or overwhelm early warning or communications systems, increasing vulnerability to a first strike. Instability in South Asia is the third risk Koblentz highlights. India and Pakistan both possess sizeable stockpiles with uncertain command and control. There is as well the potential for in-creased rivalry between China and India.

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The Los Angeles Times – Los Angeles, CA

## **New Nuclear Weapons Needed, many Experts Say, Pointing to Aged Arsenal**

By Ralph Vartabedian and W.J. Hennigan

November 29, 2014

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WASHINGTON — Two decades after the U.S. began to scale back its nuclear forces after the Cold War, a number of military strategists, scientists and congressional leaders are calling for a new generation of hydrogen bombs.

Warheads in the nation's stockpile are an average of 27 years old, raising serious concerns about their reliability, they say. Provocative nuclear threats by Russian President Vladimir Putin have added to the pressure to not only design new weapons, but also to conduct underground tests for the first time since 1992.

"We should get rid of our existing warheads and develop a new warhead that we would test to detonation," said John Hamre, deputy secretary of Defense in the Clinton administration and now president of the Center for Strategic and International Studies. "We have the worst of all worlds: older weapons and large inventories that we are retaining because we are worried about their reliability."

The incoming Republican-controlled Congress could be more open to exploring new weapons.

"It seems like common sense to me if you're trying to keep an aging machine alive that's well past its design life, then you're treading on thin ice," said Rep. Mac Thornberry, R-Texas, chairman-elect of the House Armed Services Committee. "Not to mention, we're spending more and more to keep these things going."

Thornberry also offered support for renewed testing, saying, "You don't know how a car performs unless you turn the key over. Why would we accept anything less from a weapon that provides the foundation for which all our national security is based on?"

Some of the key technocrats and scientists of the Cold War say the nation has become overly confident about its nuclear deterrence. The nuclear enterprise, they say, "is rusting its way to disarmament."

"We should start from scratch," said Don Hicks, who directed the Pentagon's strategic weapons research during the Reagan administration. "We have so much enriched uranium and plutonium left from old weapons that we could use it properly for a new generation of weapons."

In the 25 years since the Cold War ended, the U.S. has significantly retreated from the brinkmanship of the arms race, reducing its stockpile from a peak of 31,000 nuclear weapons in 1967 to its current level of 4,804 weapons. Russia has cut its stockpile to about the same size.

After the Soviet Union fell in 1991, the U.S. agreed to an international moratorium on testing, though it never ratified the Comprehensive Nuclear-Test-Ban Treaty. Halting underground tests was seen as a crucial step toward full nuclear disarmament because it would put a high barrier against developing new weapons.

The U.S. allowed much of its weapons complex to deteriorate, particularly production facilities, as cooperation with Russia flourished in the 1990s.

Today, the signs of decay are pervasive at the Pantex facility in Texas, where nuclear weapons are disassembled and repaired. Rat infestation has become so bad that workers are afraid to bring their lunches to work.

"They literally have to keep their lunch bags on a shelf that's head high so it won't get eaten," Thornberry said. "They find them on their computers, in the hallways. It's a continual problem."

The buildings at the Y-12 National Security Complex in Oak Ridge, Tenn., are so old that a concrete ceiling recently collapsed into a production area.

The Obama administration has a \$60-billion plan to modernize the Energy Department complex and update weapons, including a new type of warhead that cannibalizes components from older weapons.

The device would combine an atomic trigger from one weapon with a thermonuclear assembly from another. Called the interoperable warhead, it would reduce the number of weapons designs from seven to five, on the hopes that it would save money.

The device, which has been derided as an atomic "Frankenbomb," has prompted criticism from arms control factions. Advocates of a strong U.S. nuclear posture are not big supporters, either.

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“Mixing and mashing parts into configurations that have never been tested before is not a good idea, by any means,” said Kingston Reif, director for disarmament and threat reduction policy at the Arms Control Association. “It’s going to cost money that we don’t have for a mission that plays an increasingly limited role in U.S. national security.”

Some of the nation’s top nuclear weapons scientists say a better option is to design new weapons better suited to current threats.

In many ways, the growing nuclear capability of China, coupled with the addition of North Korea, Pakistan and India to the status of nuclear powers, has made deterrence strategy more complicated than during the Cold War.

John S. Foster Jr., former director of Lawrence Livermore National Laboratory and the chief of Pentagon research during the Cold War, said the labs should design, develop and build prototype weapons that may be needed by the military in the future, including a very low-yield nuclear weapon that could be used with precision delivery systems, an electromagnetic pulse weapon that could destroy an enemy’s communications systems and a penetrating weapon to destroy deeply buried targets.

“After more than two decades, the nuclear deterrent could be in worse shape than we want to believe,” Foster said. “We need to demonstrate the proficiency of our weapons labs and our strategic forces.”

Restarting design and production in the U.S., however, would require billions of dollars to build new facilities, including a metallurgy plant in New Mexico for plutonium triggers and a uranium forge in Tennessee for thermonuclear assemblies.

In addition, since the mid-1990s, the National Nuclear Security Administration, the Energy Department branch that oversees the atomic arsenal, has lost some of the expertise to build weapons. Most nuclear lab scientists are older than 50, and younger scientists have no experience building a weapon.

Moving ahead with any agenda for producing new bombs will require surmounting large political, financial and technological hurdles, all of which have killed Energy Department attempts in the last two decades to design new weapons.

Norton A. Schwartz, a retired four-star general who served as Air Force chief of staff, said he sensed little support for a new round of nuclear competition. “I don’t see any appetite for breaking these taboos,” he said.

The political and environmental dynamics of testing — detonations 100 miles from Las Vegas so powerful that casinos would shake — are almost impossible to comprehend in today’s climate.

Siegfried Hecker, a former director of the Los Alamos National Laboratory and now a professor at Stanford University, said testing could cause another problem. A resumption of U.S. testing would probably prompt other nuclear powers to resume as well, allowing them to catch up with the U.S.’ huge experimental lead.

The U.S. has by far the greatest archive of test data, having conducted 1,032 nuclear tests. Russia conducted 715 and China only 45.

Hecker said the U.S. has so much experience, data and scientific capability that it could build a new generation of weapons without testing.

Advocates of a strong nuclear posture say that’s an option worth pursuing because the nation’s aging weapons cannot go on indefinitely.

Absent an international deal to eliminate every nation’s nuclear stockpile, the U.S. will eventually need new weapons to maintain its deterrent effect, even if it renews some of the fear that gripped the world in the Cold War.

“The interesting thing about a nuclear deterrent is that enough of it has to be visible to scare the living daylights out of the enemy,” said Joe Braddock, a longtime Pentagon science adviser and nuclear weapons effects expert. “But if you are not careful, you scare the living daylights out of yourself.”

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<http://www.latimes.com/nation/la-na-new-nukes-20141130-story.html#page=1>

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Air Force Times.com – Washington, D.C.

## **Air Force: Hagel Departure Won't Slow Nuke Reforms**

By Robert Burns, Associated Press (AP)

December 2, 2014

WASHINGTON — The Air Force's top official predicted Tuesday that Chuck Hagel's surprise resignation as Pentagon chief will not steal momentum from his plan, announced only 18 days ago, to make top-to-bottom changes in how the nuclear Air Force is operated and managed.

"I am not concerned" about losing political push for the ambitious Hagel agenda, which includes spending billions of dollars on nuclear forces over the coming five years in an era of tight defense budgets, Air Force Secretary Deborah Lee James told The Associated Press.

She said she had briefed President Obama on the Air Force portion of the changes announced Nov. 14 by Hagel, who had ordered two in-depth reviews to diagnose the problems and recommend solutions. Hagel said the probes found deeply rooted problems caused in part by "mounting stresses" on the nuclear equipment and the troops who operate it.

"We are all on board that the changes need to happen and that it can't be a one-shot deal for one month or one year," she said in her first extensive public comments since Hagel submitted his resignation Nov. 24. "Rather, we all have to keep on it."

The Air Force has already redirected hundreds of millions of dollars to its nuclear forces. James said the administration is still putting together its priorities for the president's 2016 budget plan and the Pentagon's five-year spending blueprint to be unveiled in February.

"This is where Secretary Hagel predicted — and I think it's a good prediction — that you're going to see even more resources, it will go into the billions of dollars that end up being redirected to the nuclear enterprise," she said. "But of course until it's done it's not done. So that's why we are continuing to say that we're working on it," with final decisions coming within weeks.

She said that if Ash Carter is nominated by Obama as Hagel's successor and confirmed by the Senate, as appeared likely Tuesday, he could be expected to support the Hagel-announced efforts as well as the reforms the Air Force has already begun to implement. Hagel designated his deputy, Robert Work, as his point man for implementing the changes.

<http://www.airforcetimes.com/story/military/pentagon/2014/12/02/hagel-departure-nuclear-reforms/19786501/>

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RT (Russia Today) – Moscow, Russia

## **Nuclear Missile Launch Officer to Be Court-Martialed on Drug, Obstruction Charges**

December 03, 2014

The US Air Force will begin a court-martial in January in the case of a nuclear missile launch officer charged with drug use and obstructing justice following a criminal probe that exposed an exam-cheating scandal involving nearly 100 nuke officers.

According to the Associated Press, Second Lt. Nicole Dalmazzi of the 341st Missile Wing at Malmstrom Air Force Base in Montana is believed to be the first nuclear launch officer, or missileer, charged amid the drug investigation

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that was made public last January on the same day US Department of Defense Secretary Chuck Hagel visited Malmstrom, one of three nuclear-missile land bases in the country.

Dalmazzi was charged with illegal drug use and obstructing a probe by the Air Force Office of Special Investigations for dyeing her hair to "alter the results of potential hair-follicle drug tests," said Josh Aycock, a spokesman at Malmstrom, according to AP. Her court-martial will begin on Jan. 21.

Missileers operate Minuteman 3 missiles, which are armed with nuclear warheads controlled by two missileers on duty during rotating shifts in an underground launch center. AP was unable to reach her for comment.

Dalmazzi's fellow missileers at Malmstrom oversee 150 of the Air Force's 450 Minuteman 3 ICBMs. Minot Air Force Base in North Dakota and F.E. Warren Air Force Base in Wyoming each operate 150 ICBMs as well.

Findings of illegal drug use among missileers and allegations of a widespread exam-cheating scandal involving several Air Force missile crew members began a cascade of discouraging revelations regarding the nuclear missile force in the US.

The Navy's nuclear force, which maintains nuclear-armed submarines, has also faced an exam-cheating scandal among its nuclear reactor training instructors. And in the past two years, Air Force units charged with keeping up nuclear arsenals have also failed safety and security inspections and twice left open blast doors that protect underground launch control centers at two different bases - once while crew members slept.

In late 2013, a RAND Corp. review found signs of "burnout" and high levels of stress and misconduct, including domestic violence, among missile launch crews and missile security forces, service members in charge of America's intercontinental ballistic missiles (ICBMs).

The myriad embarrassments among nuclear force crews led Sec. Hagel to announce plans last month that would reform nuclear management and operations. Though Hagel said he would resign from his position just ten days later, Air Force officials say the protocol overhaul will continue apace, AP reported.

The Air Force's investigation into missileer drug use regards three officers at Malmstrom and one at F.E. Warren. Results of the Air Force findings have not been released publicly.

Air Force investigators' probe of illegal drug use began in August 2013, when the cellphones of two airmen at Edwards Air Force Base in California were found to contain text messages to or from 11 other Air Force officers at other air bases. The messages mentioned "specific illegal drug use that included synthetic drugs, ecstasy and amphetamines," according to an investigation report released in March.

The report originally began over exam-cheating allegations, but eventually found evidence of missileer drug use, which spawned a separate probe by the Air Force Office of Special Investigations.

Two of the 11 officers were stationed at Malmstrom. Both were found to have used personal cellphones to share answers of a frequently-taken missileer proficiency test as well as to discuss illegal drug activity.

The Air Force found that exam cheating occurred only at Malmstrom. Three officers there suspected of illegal drug activity were also involved in the exam scandal.

"We've made a big point about accountability," Air Force Secretary Deborah Lee James told AP on Tuesday of the completed OSI criminal probe. "Standards are standards, and when people fail in integrity, service and excellence there are appropriate accountability measures. We've made a big point of that and that's true across the Air Force and it has been, of course, particularly true this past year in the ICBM community."

<http://rt.com/usa/211179-nuclear-officer-drug-charges/>

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Phys.org – Douglas, Isle of Man, U.K

## **Studies Look at Long-Term Aging of Electronics in Nuclear Weapons**

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By Sue Holmes

December 4, 2014

Sandia National Laboratories is studying how environments, including radiation that originates from a nuclear weapon itself, could affect the performance of electronics in the W76-1 warhead as they age.

Sandia, which is responsible for most non-nuclear components in U.S. nuclear weapons, is helping replace W76 warheads in the nation's stockpile with a refurbished version under the W76-1 Life Extension Program (LEP). The ballistic missile warhead is carried on the Trident II D5 missile aboard Ohio-class Navy submarines.

Researchers have studied radiation effects since the early days of nuclear weapons. But a 30-year program begun in 2006 will provide real-time data for the first time on how electronics age within the weapon. Studies in the past used techniques that artificially accelerated the aging process based on a range of assumptions resulting from experiments and previous research.

"There has always been the question with accelerated aging data, how reliable is it?" said principal investigator Rachele Thompson.

The long-term project combines experiments, also known as physical simulation, with computational simulation and analysis. The approach developed as part of this project can be used in future LEPs, said Steve Wix, manager of Sandia's Component and Systems Analysis Department. Costs should be reduced for future stockpile surveillance and monitoring as well, since such lab-based studies cost less than accelerated aging techniques, which require using large environmental test facilities.

#### **Study important in moving more toward predictive models**

The project by Sandia's Electrical Sciences Group is important for science-based stockpile stewardship because new devices, or electronic parts, have been introduced into the W76-1 system since production began in 2008. These new parts must function with assured reliability and performance throughout the life of the system. The project also is moving such evaluations toward more predictive models of aging for stockpile stewardship, Wix said. Stockpile stewardship assures the safety, security and reliability of weapons in the absence of the underground nuclear tests the U.S. halted in 1992.

Most of the experiments and analysis are done in a small laboratory full of racks of test and computer equipment and in an adjacent room packed with small test chambers, square white boxes that resemble miniature refrigerators. Each test chamber contains parts in a unique environment that is continually monitored to control temperature, relative humidity and vibration frequency to ensure consistent levels of the multiple aging processes that will take decades. The experiments are overseen by test engineer Monica Espinosa.

Researchers develop and use advanced, physics-based computational simulations to predict how the electronics will perform as they age. They verify their predictions with experiments on the electronics to improve their understanding of the underlying physics engaged during the aging process. This research then guides further development of these critical simulation capabilities to resolve differences between the computer simulations and the aging experiments.

The researchers monitor thousands of devices that fall into six families of transistor and diode types. Hundreds are removed annually from the test chambers to determine their electrical performance under various operating conditions. The long-range test schedule was developed to assure that an adequate number of devices remain available for testing over the entire three decade-long study.

The parts under study were pristine when the project started eight years ago. Wix and Thompson said no significant aging changes were expected in these early years, and what they have seen matches those predictions. Currently, only simple electrical devices are being tested, but researchers hope to add more complex parts later in the project.

#### **Project exposes aged devices to laser-based testing**

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Once devices have aged in the predetermined storage environments, the team uses a sophisticated laser-based technique to expose each one to more hostile short-duration operating environments, Thompson said.

Researchers take basic electrical measurements on the aged transistors and diodes, then repackage them in preparation for evaluation with a benchtop laser-based simulated radiation environment source. They expose the parts to two different types of lasers: a broad beam that sweeps the entire device and a focused laser beam to expose it in specific areas. This process evaluates the performance of aged devices in more harsh environments. It takes up to 15 to 20 minutes for each laser study of a part, and the project studies hundreds of parts per year, Thompson said. "There is a lot of handling of parts and data analysis involved," she said.

Unless the part is damaged or fails during testing, it goes back into the appropriate aging environment for future testing. A damaged or failed part is evaluated to better understand the underlying cause.

The techniques Sandia is developing will help officials make future stockpile decisions based on an improved understanding of the impact of aging on how parts perform in multiple environments, Wix said.

Provided by Sandia National Laboratories

<http://phys.org/news/2014-12-long-term-aging-electronics-nuclear-weapons.html>

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Sputnik News.com – Russian Information Agency

## **China's New Hypersonic Strike Vehicle Takes Flight Again**

*China has performed the third test of its new Hypersonic Strike Vehicle (HGV), which is capable of traveling up to eight times the speed of sound and dodging the US anti-missile defense system; the test was monitored by US intelligence.*

5 December 2014

MOSCOW, December 5 (Sputnik) – China has conducted yet another test of its new Hypersonic Glide Vehicle (HGV) dubbed by the Pentagon WU-14, according to The Washington Free Beacon website.

The test is the third in the series of launches of the new ultra-high speed vehicle capable of travelling up to eight times the speed of sound and dodging the US anti-missile defense system, following the two previous launches of January 9 and August 7.

The test has been monitored by the US intelligence agencies.

"We are aware of reports regarding this test and we routinely monitor foreign defense activities," the Washington Free Beacon quotes Marine Corps Lt. Col. Jeff Pool as saying. "However, we don't comment on our intelligence or assessments of foreign weapon systems." he added.

Lt. Col. Jeff Pool also noted that the Pentagon has encouraged China to adopt greater openness with regard to its defense investments and military objectives, in order "to avoid miscalculation."

The previous tests of the glide vehicle have proved that the WU-14 is able to carry nuclear warheads at a speed above Mach 10, or 12,359 kilometers per hour.

The HGV is intended to be less susceptible to anti-ballistic missile countermeasures than conventional reentry vehicles. Normal reentry vehicles descend through the atmosphere on a predictable ballistic trajectory — their high speeds make intercepting them extremely difficult.

But by the late 1980s, however, several countries had begun to develop interceptor missiles that were designed to destroy these ballistic reentry vehicles.

A hypersonic glider like the HGV could pull-up after reentering the atmosphere and approach its target in a relatively flat glide, lessening the time it could be detected, fired at, or (if the initial attack failed) reengaged. Gliding makes it more maneuverable and extends its range.

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A vehicle like the WU-14 could be fitted to various Chinese ballistic missiles, such as the DF-21 medium-range missile and the DF-31 and DF-41 intercontinental ballistic missiles, extending their ranges from 2,000 km to 3,000 km and 8,000 km to 12,000 km respectively.

The second test of the vehicle turned out to be a failure, as it broke apart soon after launching.

<http://sputniknews.com/military/20141205/1015520879.html>

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Sputnik News.com – Russian Information Agency

## **Chinese Hypersonic Strike Vehicle May Overcome US Missile Defense: Expert**

*Defense technology expert Igor Korotchenko told Sputnik Friday that China's successful testing of its Hypersonic Strike Vehicle has the potential to affect US national security.*

5 December 2014

MOSCOW, December 5 (Sputnik) — Igor Korotchenko, Director of the Center for the Analysis of the World Arms Trade told Sputnik on Friday that China's successful testing of a Hypersonic Strike Vehicle (the HGV) demonstrates the country's potential to affect US national security in a serious way.

"US anxiety is centered on the fact that China is actively experimenting with weaponry that is based on hypersonic speed, which is nearly impossible to intercept using currently-available US missile defense systems," Korotchenko told Sputnik.

It had been reported earlier that China had conducted another test of the HGV, dubbed the WU-14 by the Pentagon, an ultra-high speed vehicle capable of travelling up to eight times the speed of sound. Earlier tests of the vehicle had shown it capable of carrying nuclear warheads at a speed of over Mach 10, or 12,359 kilometers per hour.

The experimental weapon, which is designed to thwart anti-ballistic missile countermeasures, is capable of approaching its target at a relatively flat glide, reducing the likelihood of detection and the ability of any foe to launch countermeasures. The serialized production of such a delivery system would also extend the range of existing Chinese intercontinental ballistic missiles by up to a third.

Korotchenko noted that the creation of these HGVs by China "demonstrates the country's capability of creating the necessary technology to [negatively] affect US national security."

"At present, China's defense industry is informed by the concept that the United States is the country's main enemy. The Chinese military's development plans, the configuration of Chinese forces, and the country's desire to build a carrier fleet—all of this is taking place in the context of its rivalry with the United States," Korotchenko said. "Therefore, the negative commentary which may be found in the American media is a reflection of the fact that the US is coming to realize the extent of the growth in China's military capabilities, and is alarmed by it," the expert added.

Korotchenko noted that Russia too is actively working on the development of hypersonic technology, recently 'unfreezing' developments which had been stopped in the 1980s due to the collapse of the Soviet Union. Among the companies presently working on this task is the state corporation Tactical Missiles Corporation JSC.

<http://sputniknews.com/military/20141205/1015542797.html>

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Sputnik News.com – Russian Information Agency

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## Russian Strategic Missile Forces to Get New Military Equipment: Ministry

*Russian Ministry of Defence announced that Russian Strategic Missile Forces to receive 29 units of new military equipment by the end of the year.*

1 December 2014

MOSCOW, December 1 (Sputnik) – Russian Strategic Missile Forces (RVSN) will receive 29 units of new military equipment by the end of the year, the country's Defense Ministry has announced.

"In the final stage of 2014, as part of a plan to re-equip the RVSN, the delivery of 29 modern units of weaponry [as well as] military and special equipment is planned," Col. Igor Egorov, the ministry's spokesperson for RVSN said.

The delivery will include intercontinental ballistic missiles and launchers, according to Egorov, who added that RVSN will hold over 100 exercises next year.

"In 2015, over 100 command post, tactical and special exercises will be held in RVSN," Egorov said, adding that particular attention will be paid to the interaction of missile regiments with combat, logistics, security and intelligence units.

Overall, the Russian Defense Ministry will organize about 4 thousand military drills in 2015, according to the ministry's press service.

<http://sputniknews.com/military/20141201/1015333051.html>

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Product Design & Development Net.com – Madison, WI

## MIT Lab Receives \$3.2M for Nuclear Warhead Verification

Monday, 1 December 2014

By Nuclear Science & Engineering, MIT

The Department of Nuclear Science and Engineering's Laboratory for Nuclear Security and Policy (LNSP) has received \$3.2 million from the National Nuclear Security Administration to support research that could revolutionize the verification of international arms-control treaties.

For nearly four decades, the United States and Russia have worked to reduce the number of nuclear weapons aimed at each other, but without any mechanism to verify that excess warheads were destroyed. The problem is that even rudimentary inspections of nuclear warheads can reveal national-security secrets.

Professors R. Scott Kemp and Areg Danagoulian have proposed both an instrument and a protocol that would allow strong verification of warhead dismantlement by foreign inspectors, while at the same time protecting national secrets.

The system is a physics manifestation of interactive zero-knowledge proofs, a mathematical concept invented at MIT in the 1980s in which the verity of an assertion can be proved without revealing any underlying information.

The proposed instrument uses gamma rays to measure the physical layout of a nuclear warhead and its isotopic composition. The measurement is then declassified through a physical process that does not use electronics or software.

The only surviving information is a signature that indicates whether the warhead is authentic or not, but which contains no other information about the warhead.

The new effort is the largest project in the five-year, \$25 million Consortium for Verification Technology led by the University of Michigan and funded by the Department of Energy's National Nuclear Security Administration.

The MIT team, headed by NSE's Richard Lanza, also includes work on big data for nuclear-security applications.

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Shafi Goldwasser, the RSA Professor of Electrical Engineering and Computer Science at MIT, and co-leader of the cryptography and information security group at the MIT Computer Science and Artificial Intelligence Laboratory, has joined the LNSP project as a collaborator.

Goldwasser discovered zero-knowledge proofs, for which she received the 2012 Turing Award. Asked about the project, Goldwasser said, "This is very exciting for me! I have been waiting 30 years to see the ideas behind interactive and zero-knowledge proofs applied to problems outside the realm of mathematics and digital information."

The new award builds on a \$5 million grant LNSP received last year for a novel method of safely interrogating commercial cargo containers to test for the presence of nuclear materials and nuclear weapons hidden behind dense shielding.

<http://www.pddnet.com/news/2014/12/mit-lab-receives-32m-nuclear-warhead-verification>

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TASS Russian News Agency – Moscow, Russia

## **US Withdrawal from ABM Treaty Created Threat of Disrupting Balance of Forces — Putin**

*According to Putin, US unilateral withdrawal from ABM in 2002 poses a threat not only to Russia's security, but also to the entire world, the Russian president says*

December 04, 2014

MOSCOW, December 4. /TASS/. After the United States' unilateral withdrawal from the Anti-Ballistic Missile (ABM) Treaty in 2002, the world faced the threat of disruption of the strategic balance of forces, which is dangerous not only to Russia and the world, but also to the United States itself, Russian President Vladimir Putin said on Thursday in his annual state of the nation address to the Federal Assembly.

"Starting from 2002, after the US unilateral withdrawal from the ABM Treaty, which is an absolute cornerstone of international security, the strategic balance of forces and stability, the creation of the US global missile defense system has been continued persistently," said the Russian president. According to him, this poses a threat not only to Russia's security, but also to the entire world — just because of the possible disruption of this strategic balance of forces.

"I think this is harmful for the United States as well, because it creates the dangerous illusion of invincibility," Putin said.

<http://itar-tass.com/en/russia/765085>

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Air Force Global Strike Command – Barksdale, LA

## **ICBM Road Show Updates Airmen on Future of ICBM Force**

By Airman 1st Class Joshua Smoot, 341st Missile Wing Public Affairs

December 1, 2014

12/1/2014 - MALMSTROM AIR FORCE BASE, Mont. -- Representatives from Headquarters Air Force Global Strike Command visited Malmstrom Air Force Base Nov. 17-18 as part of the Intercontinental Ballistic Missile Road Show.

The team held five briefings informing Airmen about sustainment and modernization programs that are being developed and deployed by AFGSC.

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Topics discussed included manpower, ICBM investment programs, new funded programs for fiscal years 2015-2020, ICBM sustainment/normalization, future missile systems, UH-1N helicopter sustainment/modernization and helicopter replacement.

To better help with manpower, AFGSC will receive funding for over 1,100 authorizations.

Across the three missile wings, missile security forces will be receiving over 287 additional billets, and munitions squadrons will be receiving more than 50 additional billets. Missile crew operations will be receiving more than 20 additional 13N - nuclear and missile operations officer billets and can expect to see crew members mid to late 2015. Additionally, helicopter operations will be receiving over 100 members - pilots, co-pilots and flight engineers - and more than 50 additional personnel to stand up a helicopter operations group. In missile maintenance, more than 45 additional military and civilian billets have been added across the wings.

The team also spoke about ICBM investment programs AFGSC has recently completed such as the Fast Rising B-plug and others that have been set in motion to include diesel replacements at launch facilities and missile alert facilities, and updating reentry field support equipment.

The Force Improvement Program acted as a catalyst to help get several sustainment programs completed. In fiscal year 2014, the Air Force reallocated \$161 million to ICBM force support to include upgrades in maintenance parts, equipment and facilities.

A program for missile wings to receive new payload transporters is currently being developed, said Tech. Sgt. Michael Shedd, an AFGSC ICBM Systems Manager.

The new payload transporters will be fully up-armored and have increased protection.

To better enhance the ICBM force, launch control centers will receive upgrades such as new control panels, printers and oxygen regeneration units.

"With all of the new upgrades, we also have to update the trainers to meet all of the requirements," Shedd said.

In fiscal year 2016, the T-9 launch facility trainer at Malmstrom will begin its upgrade conversion.

The team also spoke about the Ground Based Strategic Deterrent - the follow on for the Minuteman III weapon system. Instead of replacing parts and pieces of the current system, a new integrated system will be developed.

They will do this by restoring missile alert facilities and launch facilities, integrating new flight systems to place in restored launch facilities and by deploying a new command and control system and supporting ground equipment.

The current UH-1N helicopters will also be modernized with newer pilot, co-pilot and flight engineer seats for better crash survivability, and cockpits compatible with night vision goggles. These changes will be installed between July 2015 to July 2017.

AFGSC is also looking into replacing the aging fleet of the current UH-1N with a replacement helicopter. The new aircraft will come with weapons mounts, common missile warning systems, ballistic armor plating and cold weather kits.

"We are optimistic on a replacement for the UH-1N," said Col. H.B. Brual, AFGSC Deputy Director, Strategic Plans, Programs, Requirements and Assessments. "However, the replacement helicopter is contingent on receiving the required funding."

"It's valuable to know what direction we are heading," said Col. Marné Deranger, 341st Missile Wing vice commander. "It makes all of the pieces and parts we are working on make sense. This is important stuff to understand and ask questions about."

<http://www.afgsc.af.mil/news/story.asp?id=123432891>

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The Korea Herald – Seoul, South Korea

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## Concerns Rise over N. Korea's Submarine Missile Capability

By Song Sang-ho  
December 1, 2014

Concerns are growing over North Korea's pursuit of a submarine-launched ballistic missile, which, if fully developed, could pose a serious security threat that may not be countered by the current capabilities of the South Korea-U.S. alliance.

Various reports and intelligence based on satellite imagery have suggested that the North has been testing launching systems on ground-based facilities to apparently mount them on submarines or naval vessels.

Experts expressed doubts about the North's submarine capability, saying that the North had yet to reach the technological level to mount ballistic missiles on its submarines. But they said the SLBM in the hands of the unpredictable regime would be of grave concern.

"In terms of the size of its submarines and its technological level, I believe the North can hardly be able to build an SLBM at the moment. But it is true that there has been a series of signs that the North has been attempting to develop an SLBM," a source told The Korea Herald, declining to be identified.

"Given all these signs, my assumption is that the North's development is just at a rudimentary stage. For the SLBM, you need a submarine large enough to carry the SLBM, and sophisticated technology to put a (nuclear) warhead on a ballistic missile."

Fears about the SLBM stem from the North's potential "second-strike capability" to launch an overwhelming nuclear retaliation if it suffers a first strike from enemy forces.

"The SLBM is perhaps the most threatening nuclear weapons system in modern-day warfare, as naval experts say that it is virtually impossible to detect submarine operations even with a highly advanced sonar system or anti-submarine equipment," said Park Won-gon, security professor at Handong Global University.

The second-strike capability forms the basis of a condition referred to as "mutual assured destruction" that maintained the "balance of terror" during the Cold War era. Submarine-launched ballistic missiles are at the core of the capability as submarines can launch targeted stealthy attacks on enemy forces.

Nuclear experts also consider strategic bombers, intercontinental ballistic missiles and SLBMs to be the strategic components of a "nuclear triad" needed to ensure a nation's nuclear deterrence — a reason why major military powers have struggled to acquire the three weapons systems.

During the Cold War, the nuclear weapons served to maintain a "long peace" based on the rational thinking that one nuclear power would not stage a nuclear war with the other side as the war would mean an irrevocable catastrophe for both sides. But when it comes to the unpredictable regime, it would be difficult to expect it to carry the same rationale, observers pointed out.

"At a critical time in a war, one can use the SLBM to wreak havoc on the enemy forces or even civilian targets — a reason why the SLBM has served as a powerful nuclear deterrent. But that is when each side thinks rationally," said a security expert, declining to be identified.

"But should a rogue state have the SLBM, it would be very dangerous as we never know how it would use the weapons system."

The U.S., South Korea's security ally, has offered "extended deterrence" — Washington's commitment to protecting its ally with its nuclear and conventional assets against threats from nuclear arms and other weapons of mass destruction.

But the deterrence commitment focused mostly on dealing with ground-based targets, experts noted, raising the need for the allies to come up with effective ways to counter the possible SLBM threat from the North.

<http://www.koreaherald.com/view.php?ud=20141201001007>

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Channel NewsAsia.com – Singapore

## China Will Not Go to War for N Korea: Ex-General

*A former Chinese general has warned North Korea that China will not come to its rescue if the regime collapses or starts a war.*

Agence France-Presse (AFP)

02 December 2014

BEIJING: China will not step in to save neighbouring North Korea if the Pyongyang regime collapses or starts a war, a retired People's Liberation Army general said, possibly signalling waning patience in Beijing with its wayward, nuclear-armed ally.

"China is not a saviour," Wang Hongguang, formerly deputy commander of the Nanjing military region, wrote in the Global Times newspaper, which is close to the Chinese Communist Party. "Should North Korea really collapse, not even China can save it."

Wang's comments came in a contribution to the nationalist tabloid's Chinese-language website. The outspoken Wang has made critical comments about North Korea before and it was not clear whether his words indicated a policy shift regarding Pyongyang. China has long been the isolated North's key ally and aid provider.

Beijing came to the fledgling country's aid during the 1950-53 Korean War, when its intervention against US-led United Nations forces defending South Korea helped seal an eventual stalemate that has lasted to this day. China's role has grown as the North's economy has shrunk in the wake of the collapse of the Soviet Union almost a quarter of a century ago, with which Pyongyang had close trade and aid ties.

But over the same period Beijing has moved to develop diplomatic relations and booming trade ties with Seoul, Pyongyang's bitter rival. Chinese President Xi Jinping and South Korean President Park Geun-Hye have exchanged visits, while Xi and North Korean leader Kim Jong-Un have so far kept their distance. Wang said China would not get involved in any new war on the Korean peninsula.

"China cannot influence the situation on the Korean peninsula," he wrote. "China has no need to light a fire and get burnt," he added. "Whoever provokes a conflagration bears responsibility."

"Now there is no more 'socialist camp'. It is not necessary for China's younger generation to fight a war for another country," he wrote in the comments, published Monday.

Wang criticised the North for its nuclear development, using it as an example of how its interests can differ from China's and saying it had "already brought about the serious threat of nuclear contamination in China's border area".

But he also slammed Western countries for what he described as "demonising" North Korea and interfering in its internal affairs in the name of human rights. "China absolutely does not meddle," he wrote.

Beijing will "support what should be supported and oppose what should be opposed" regarding the North, he said, indicating China was not ready to completely give up on its troublesome neighbour. China will neither "court" nor "abandon" North Korea, he wrote. "This should be China's basic attitude."

<http://www.channelnewsasia.com/news/asiapacific/china-will-not-go-to-war/1505762.html>

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The Chosun Ilbo – Seoul, South Korea

December 4, 2014

## N.Korea 'Most Volatile and Dangerous Threat' in Asia

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The next commander of the U.S. Pacific Command on Tuesday described North Korea as the "most volatile and dangerous threat" in the Asia-Pacific region.

Admiral Harry Harris was speaking during a confirmation hearing before the Senate Committee on Armed Services. He added North Korean leader Kim Jong-un is "opportunistic, unpredictable and ruthless as he seeks to acquire nuclear weapons and the means to deliver them intercontinentally."

The Pacific Fleet must be "ready to fight tonight," if required, because of the regime's "uncertain activities," he added.

Harris claimed the North's massive conventional military capability, its tenacious development of weapons of mass destruction and weapons delivery systems, and the regime's consolidation of power are a clear and present threat in the Asia-Pacific region.

He also indicated that he would deploy 60 percent of 286 U.S. warships in this region by 2019 to remove the threat from the North and deal with a rising China.

Meanwhile, in a separate written statement Harris pledged to send two additional Aegis destroyers with a ballistic missile defense system to Japan by 2017 and deploy a fourth nuclear-powered submarine at Guam.

[http://english.chosun.com/site/data/html\\_dir/2014/12/04/2014120401047.html](http://english.chosun.com/site/data/html_dir/2014/12/04/2014120401047.html)

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The Korea Times –Seoul, South Korea

## **N. Korea Conducted Small Nuclear Test in 2010: China Professor**

December 4, 2014

A Chinese professor has claimed that North Korea conducted a "low-yield underground nuclear test" in May 2010, possibly backing a claim by North Korea that it succeeded in carrying out a nuclear fusion reaction at that time.

Wen Lianxing, the professor who leads a research group on earthquakes and physics at the Beijing-based University of Science and Technology of China, said the North's claimed nuclear test yielded a 2.9-ton blast with a margin of error of 0.8 ton.

The claimed nuclear test was conducted at 9:08 a.m. (local time) on May 12, 2010, Wen said in his research material posted on the university's website on Nov. 20, this year. The professor said the research was based on his research group's "new micro-seismic detection methods."

North Korea conducted three nuclear tests in 2006, 2009 and 2013. Last year's third nuclear test was believed to have a maximum yield of 9 kilotons, according to South Korean estimates.

On May 12, 2010, North Korea's state news outlets reported that the impoverished nation had succeeded in creating a nuclear fusion reaction to produce energy, a claim immediately met by skepticism because the North appears to be incapable of carrying out such a test.

Fusion reactions result in a thermonuclear explosion, such as one generated by a hydrogen bomb, which is far more powerful than that of a fission device. International experts, however, agree that commercial energy creation from fusion is decades away.

In the research material, Wen said his research group, "Using a new micro-seismic detection method, we confirm that North Korea conducted a small-yield underground nuclear explosion at 9:08 a.m. (local time) on May 12, 2010."

The professor posted a map and coordinates that identify the site of North Korea's claimed nuclear explosion in 2010.

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The research material did not identify the site's name, but it appears to be close to North Korea's northeastern county of Kilju, where the country's Punggye-ri nuclear test site is located, according to the coordinates.

Wen said the research material, under the title of "Seismological Evidence for a Low-Yield Nuclear Test on 12 May 2010 in North Korea," was also published by the latest edition of a U.S. science magazine, "Seismological Research Letters."

Wen said South Korean and Western media "ignored" North Korea's reports about a nuclear fusion reaction at that time, but, "This confirmed nuclear test might be related to the nuclear fusion reaction."

Calls to Wen's office or the Chinese university were not immediately answered.

For decades, North Korea has pursued a nuclear weapons program based on plutonium produced from spent nuclear fuel. In late 2010, North Korea unveiled its uranium enrichment facility to visiting U.S. nuclear scientists, giving the country a second way to make nuclear bombs.

South Korea, however, dismissed Wen's claim, saying such a possibility is very low.

"(The government) sees a very low chance that North Korea carried out a nuclear test in May 2010," Kim Min-seok told a regular press briefing. "Any test of such a small scale cannot be regarded as a nuclear test."

Seoul's foreign ministry spokesman Noh Kwang-il said the government was closely monitoring developments in the North's nuclear activities in cooperation with the United Nations and other international organizations. (Yonhap)

[http://www.koreatimes.co.kr/www/news/nation/2014/12/116\\_169297.html](http://www.koreatimes.co.kr/www/news/nation/2014/12/116_169297.html)

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People's Daily Online.com – Beijing, China

## **Xi Jinping Urges Development of Military Equipment Systems**

(Xinhua)

December 05, 2014

BEIJING, Dec. 4 -- Chinese President Xi Jinping has urged accelerating development of military equipment systems to help build a strong army.

Addressing a conference of the People's Liberation Army (PLA) on equipment, held from Wednesday to Thursday, Xi said advanced weaponry is the embodiment of a modern army and a crucial support for national security and rejuvenation.

The building of equipment systems should be information-led and pay great attention to weapon quality, said Xi.

Equipment systems are now in a period of strategic opportunities and at a key point for rapid development, he noted.

The PLA must understand and make plans for system building in the context of the changes in both international strategic structure and Chinese national security.

A strong and modern army equipment system plays an irreplaceable role for the full realization of the Chinese Dream, Xi said, adding that the PLA must enhance political consciousness to seize the opportunity and ensure the rapid upgrading of equipment.

The equipment must be innovative, practical and forward-thinking to meet the demands of actual combat and fill in the weak spots of China's existing equipment.

Military officers at all levels should play a leading role and use actual combat to guide soldiers to improve their capacity to operate weapons, Xi said.

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Xi, also chairman of the Central Military Commission, said the PLA should put a human resource strategy first by opening minds and not following a set model to establish a highly competitive talent reserve.

China's ambition for a strong military works as a guideline for the country's defense and military equipment modernization.

"We expect peace, but we shall never give up efforts to maintain our legitimate rights, nor shall we compromise our core interests, no matter when or in what circumstances," Xi said earlier this year when joining a plenary meeting of the PLA.

In the meantime, national conditions have also dictated that a well-equipped PLA is needed for multiple purposes domestically, from disaster relief to maintaining stability and national unity.

Xi, who leads the country's reform on national defense and the armed forces, stressed that military reform should be guided by the objective of building a strong army.

<http://en.people.cn/n/2014/1205/c90786-8818381.html>

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The Moscow Times – Moscow, Russia

## **Russia Looks to Revive Nuclear Missile Trains to Counter U.S. Attack Capability**

By Matthew Bodner  
November 27, 2014

Russia's Strategic Rocket Forces are considering bringing back iconic Soviet-era nuclear missile trains as Moscow pumps money into a complete overhaul its aging nuclear arsenal.

According to an unidentified source in the Russian military-industrial complex quoted by the TASS news agency on Thursday, the Moscow Institute of Thermal Technology — makers of the Topol, Yars and Bulava missiles — is designing a next-generation missile launching train.

"While the decision to start manufacturing [missile trains] is still pending, the probability is high that it will happen," the source was quoted as saying, explaining that technical studies and cost estimates are still being conducted.

"In the best-case scenario, they will be deployed by the end of the decade, probably somewhere around 2019," he said.

The Russian nuclear forces are the prime beneficiaries of Moscow's sweeping 20 trillion ruble (\$500 billion) military rearmament drive, with authorities pledging to completely modernize the country's arsenal with new rockets better suited to respond to modern threats.

The Soviet Union began deploying nuclear missile trains in 1987. The trains used RT-23 Molodets missiles, built by the giant Yuzhmash machine building plant located in modern day Ukraine. By the time the U.S.S.R. collapsed in 1991, 56 of the missiles were deployed on missile trains. Ukraine stopped building RT-23s, and by 2005 Russia had decommissioned all of them.

In December last year, Lieutenant General Sergei Karakayev of the Strategic Rocket Forces said that the U.S. Prompt Global Strike program was forcing Russia to begin conducting studies on putting the concept back into practice.

Prompt Global Strike refers to the development by the U.S. of hypersonic missiles that will be capable of fast, high precision strikes anywhere on the globe.



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In this context, missile trains make a lot of sense for Russian defense strategists. One of the key elements of any nuclear war plan is the ability of your nuclear forces to survive a first strike from an opponent and counterattack with devastating force.

A missile train would increase the survivability of Russia's nuclear arsenal, complicating efforts to locate its missiles by moving them quickly and consistently around the country.

<http://www.themoscowtimes.com/business/article/russia-looks-to-revive-nuclear-missile-trains-to-counter-us-attack-capability/511979.html>

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TASS Russian News Agency.com – Moscow, Russia

## **Bulava Inter-Continental Ballistic Missile Test-Launched from Nuc Submarine in Barents Sea**

*The nuclear-powered submarine made a single test-launch in the Kamchatka Peninsula in the Russian Far East*  
November 28, 2014

MOSCOW, November 28 /TASS/. Russia has successfully test fired a Bulava inter-continental ballistic missile from the Alexander Nevsky strategic nuclear-powered submarine, the press service of the Russian Defense Ministry information department said on Friday.

The nuclear-powered submarine made a single test-launch in the Kamchatka Peninsula in the Russian Far East.

“The submarine was test launched from a submerged position. The parameters of Bulava flight trajectory functioned normally. According to confirmed objective control data, the missile’s warheads successfully reached a testing range in the Kamchatka Peninsula,” Russian Defense Ministry spokesperson General Igor Konashenkov said.

<http://itar-tass.com/en/russia/764292>

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C4ISR&Networks.com – Washington, D.C.

## **France Studies Nuclear Missile Replacement**

By PIERRE TRAN

November 30, 2014

PARIS — France has launched studies for an airborne nuclear-tipped missile to replace the current weapon, with the focus on stealth and hypersonic technology on the next-generation atomic arms, Defense Minister Jean-Yves Le Drian said.

The Air Force flies the Dassault Mirage 2000N and Rafale F3 fighters armed with the air-sol moyenne portée-améliorée (ASMP-A) nuclear missile, respectively on the Gascogne and La Fayette squadrons. These are the airborne systems in addition to the four ballistic nuclear missile submarines.

“The studies for the successor to the ASMP-A missile, dubbed ASN4G, have already begun,” Le Drian told a high-level conference on the French nuclear deterrent on Nov. 20. ASN4G is understood to refer to air-sol nucléaire fourth-generation, an industry executive said.

The sensitivity of the deterrent was such that the conference organizer showed an extended video clip of a training mission that obscured an ASMP-A missile carried under the fuselage of a Rafale. A special edition of specialist magazine Air & Cosmos carried a cover picture of a weapon marked ASMP-A under a Rafale. The published pictures are understood to have been adapted by the Air Force to avoid giving too much detail. Air & Cosmos was not available for comment.

Copies of the magazine were distributed at the conference.

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“The daring concepts, for example, based on stealth and hypersonic technologies, at the forefront of technological development, will be explored,” Le Drian said.

The projects are key to overcoming the enemy’s interdiction and also for the domestic industrial and technology base, he said.

“The choice of the future weapon system, comprising the ASN4G missile and a platform to be decided, is therefore a major issue for the services,” he said. The project is closely tied to the future format of the Air Force, he said.

Work began in the summer on the ASMP-A, intended to allow the air-breathing missile to defeat future air defense systems out to 2035, Le Drian said. The work consists of design and development studies for the mid-life upgrade, a source said.

Chief of the Air Staff Gen. Denis Mercier previously gave a glimpse of the technology studies on the future airborne weapon, which will call for a choice between stealth or speed.

A stealth study and one on hypersonic speed are underway for the successor to the ASMP-A, Mercier told the defense committee of the lower-house National Assembly in April. The hypersonic weapon might be capable of Mach 7 or 8, he said.

MBDA is prime contractor on the ASMP-A.

Mercier told the parliamentarians he preferred the hypersonic missile.

“It’s the second solution that I prefer,” he said. Mastery of the hypersonic is already a given factor, he said. The U.S., Russia, China, India are looking at the hypersonic technology as they consider a modernization of the airborne nuclear element, with experimental work conducted, he said.

On the future platform carrying the atomic weapon, a choice had to be made on the architecture and performance of the missile, he said. Two options are under study: a new generation fighter, and a bomber.

“The challenge is to select a system able to penetrate defense systems which will be deployed in 20 to 50 years,” he said. The work was also important for the industrial base, he said.

Anti-missile defense has made much progress against ballistic and cruise weapons, he said.

The work on the stealth or hypersonic missile technology will influence development of the future aircraft. For instance, if a hypersonic missile were capable of flying at Mach 7 and were 20 meters long, the aircraft would need to be a large plane, such an Airbus A400M, rather than a fighter such as the Rafale.

<http://www.c4isrnet.com/article/M5/20141129/DEFREG01/311290019/France-Studies-Nuclear-Missile-Replacement>

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RT (Russia Today).com – Moscow, Russia

## **Russia Launches ‘Wartime Government’ HQ in Major Military Upgrade**

December 01, 2014

Russia is launching a new national defense facility, which is meant to monitor threats to national security in peacetime, but would take control of the entire country in case of war.

The new top-security, fortified facility in Moscow includes several large war rooms, a brand new supercomputer in the heart of a state-of-the-art data processing center, underground facilities, secret transport routes for emergency evacuation and a helicopter pad, which was deployed for the first time on Nov. 24 on the Moscow River. The Defense Ministry won’t disclose the price tag for the site, but it is estimated at the equivalent of several billion dollars.

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The new National Defense Control Center (NDCC) is a major upgrade on what was previously called the Central Command of the General Staff, a unit tasked with round-the-clock monitoring of military threats against Russia, particularly ballistic missile launches, and deployment of strategic nuclear weapons. It was roughly a counterpart to the US National Military Command Center, the Pentagon's principal command and control site.

The NDCC inherits all those functions, but also has plenty of extra roles as well. In peacetime, an additional task is to monitor all of Russia's important military assets, from hardware being produced by defense contractors to the state of oil refineries, to weather conditions and their effect on transportation routes.

And if Russia does get into a war, the center would act as a major communication hub and a form of wartime government, delivering reports to the country's military command and giving orders to all ministries, state-owned companies and other organizations, according to the needs of the armed forces.

*"The creation of NDCC was one of the biggest military projects of the past few years. The closest analogy in the past in terms of functions and tasks was the Commander-in-Chief HQ in 1941-45, which centralized all controls of both the military machine and the economy of the nation in the interests of the war,"* Lt. General Mikhail Mizintsev, the NDCC chief, told Lenta.ru in an interview.

The military says the upgrade has been long overdue. The national security situation may be very fluid in modern times, and instead of days the leadership may have only an hour to take crucial military decisions. The center's job is to offer the Defense Minister and the President options in case of emergency, which would be based on facts, figures and accurate projections.

Potentially the biggest part of the upgrade was the creation of communication and data processing equipment that would give the military computer power and software needed to factor in hundreds of parameters in their mathematical models. The Defense Ministry had to use only domestically-produced hardware due to security considerations, which limited its options.

According to officials, the result is a very robust computer network with state-of-art data encryption and multiple backup sites spread throughout the country, which would keep the center functional even if its main facility in Moscow is damaged by an enemy attack or sabotage.

The center employs over 1,000 officers working on a rotating watch system. Mizintsev said the armed forces selected their best officer for the posts, many of which are new for the Russian military and require skills not previously taught to officers on a regular basis until recently. They have been operating in trial mode since April.

A thoroughly military facility, the NDCC has an unexpected civilian component to it. Its location in Moscow is close to two major hospitals, including the Pirogov trauma center. Both hospitals are quite old and their original designs didn't provide for dedicated helicopter pads.

The Defense Ministry said the medics can share NDCC's new pad on the Moscow River for emergency patient transportation. The pad can accommodate helicopters weighing up to 15 tons, enough to land a Mil Mi-8, world's most-produced transport helicopter, or a Mil Mi-38, its designated replacement.

<http://rt.com/news/210307-russia-national-defence-center/>

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Trend News.com - Baku, Azerbaijan

## **Iran Not to Accept Surveillance on its Missile Program**

By Umid Niayesh, Trend  
30 November 2014

An Iranian official said Nov. 30 that the country will not accept surveillance on its missile program.

Iran's missile power may not be observed by foreigners, the Secretary of the Iranian Supreme National Security Council Ali Shamkhani said, the country's Fars news agency reported Nov. 30.

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The Iranian missile tests and ranges are compatible with possible threats, Shamkhani said, adding the Islamic Republic's missile program has no inclinations to unconventional weapons.

He underlined that Iran is not facing any military threat - neither currently, nor in the new future.

"The enemies are not able to realize military threats against Iran," Shamkhani said, adding "the military option against Iran is not on the table due to its high costs for the counter side."

The senior Iranian official repeatedly announced that the country's missile power will not be a topic for negotiations during nuclear talks with P5+1 (the US, Russia, China, Britain, France and Germany).

Last April, Iran's defense minister, Hossein Dehghan said the country will never accept any intervention from the western side on the issue, Iran's Fars news agency reported April 16.

Earlier in February, the US negotiator, Wendy Sherman, said Iran's ballistic capabilities should be addressed as part of a comprehensive agreement with Iran.

Dehghan said "the westerners say that Iran may use its ballistic missiles to deliver nuclear warheads, but we repeatedly announced that weapons of mass destruction have no place in Iran's defense doctrine."

The US and its Western allies suspect Iran of developing a nuclear weapon - something that Iran denies. Iran and the P5+1 agreed to extend nuclear talks until July 1, 2015 after failing to meet the Nov. 24 deadline to reach a comprehensive nuclear agreement.

<http://en.trend.az/iran/politics/2338660.html>

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The Daily Star – Beirut, Lebanon

## **Khamenei Tells Iran's Armed Forces to Build up Irrespective of Nuclear Diplomacy**

Mehrdad Balali, Reuters

December 01, 2014

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Iran's supreme leader Ayatollah Ali Khamenei said on Sunday the armed forces should increase their combat capability regardless of political considerations, in an apparent allusion to continuing nuclear talks with the West aimed at easing tension in the Middle East.

"Given our vast maritime borders and the enemy's huge investments in this area, our armed forces should continuously improve their (combat) readiness, irrespective of political calculations," Khamenei told a gathering of senior navy officials during a ceremony to mark the "Navy Week" in Iran.

Khamenei, who commands all branches of the armed forces in addition to other key centers of power in the Islamic republic, did not mention any countries by name but he normally uses "enemy" to refer mainly to the United States and Britain -- both of which have intervened in Iran over the past century.

"Peacetime offers great opportunities for our armed forces to ... build up on preemptive capacities," said Khamenei, with state television playing excerpts of his speech.

The United States and its key regional ally Israel have both hinted they might bomb Iran to prevent it developing nuclear weapons. Iran denies any such ambition and insists its atomic program is designed for civilian projects.

With Khamenei's blessing, Iran's moderate President Hassan Rouhani launched a diplomatic initiative to resolve a 12-year nuclear dispute, hoping to save his country from punishing global sanctions. Tehran and six world powers missed a self-imposed deadline on Nov. 24 for a deal, but gave themselves seven more months to overcome their many differences.

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Despite his reserved support for the negotiations, Khamenei, perceived by many as a hardliner, remains distrustful of Western intentions in the region and insists that Iran's defense capability, including its controversial missile program, must not be part of any broad diplomatic deal.

In tandem with Rouhani's diplomatic overture, generals appointed by Khamenei are maintaining a relentless war rhetoric and unveil on an almost daily basis what they say are new innovations in weaponry.

"The range of (our) missiles covers all of Israel today," the chief of the Revolutionary Guards, General Mohammad Ali Jafari, said last week. "That means the fall of the Zionist regime, which will certainly come soon."

However, Admiral Ali Shamakhani, an ally of President Rouhani who serves as a top security official, sought to temper the bellicose language on Sunday.

"Our missile capability, like our nuclear, is inherently peaceful and geared for self defense," the official IRNA news agency quoted him as saying.

<http://www.dailystar.com.lb/News/Middle-East/2014/Dec-01/279450-khamenei-tells-irans-armed-forces-to-build-up-irrespective-of-nuclear-diplomacy.ashx>

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Al Monitor – Washington, D.C.

## **Iran to Limit Centrifuge R&D under Extension**

By Laura Rozen

December 1, 2014

Iran will limit research and development on its advanced centrifuges, grant the IAEA expanded access to its centrifuge facilities and convert half its stocks of 20% oxide into fuel for a research reactor under the terms of a seven-month extension on an interim nuclear deal reached with six world powers in Vienna last week.

The terms of the extension were shared with Al-Monitor by a source briefed by the negotiating teams. In return for the steps Iran will take, the five permanent members of the UN Security Council plus Germany (P5+1) have agreed to continue providing Iran \$700 million in its oil sale proceeds per month, amounting to almost \$5 billion total through June 30, as well as to continue suspending certain sanctions including on petrochemical exports, trade in precious metals and auto parts. Iran and the P5+1 announced Nov. 24 that they would try to reach a political agreement for the final nuclear deal within four months, with the additional three months of the extension to be used to complete drafting of the technical and implementation details.

Among the steps Iran has agreed to take under the seven-month extension, the source briefed by the negotiating teams said:

- It will turn more of its stocks of 20% oxide into fuel for the Tehran Research Reactor, taking it off the table in a breakout scenario. Specifically, Iran will convert 35 kg of its remaining approximately 75 kg of 20% oxide into reactor fuel.
- Iran will provide expanded access to the International Atomic Energy Agency (IAEA) to existing centrifuge production facilities. The IAEA will now double the frequency of its visits to the sites where Iran makes its centrifuges, and do so in the form of "snap inspections," i.e., at times of its choosing.
- Iran, under the extension, will limit research and development on advanced centrifuges. Specifically, Iran will refrain from pursuing semi-industrial-scale operation of the IR-2M. It will not feed the IR-5 centrifuge with uranium gas. Nor will it pursue gas testing of the IR-6 on a cascade level. It will also not install the IR-8 at the Natanz Pilot Plant, without which Iran cannot move beyond mechanical testing and into gas testing. These commitments ensure that all models of Iran's advanced centrifuges do not move to the next phase of testing during the next months while negotiators try to reach a final nuclear accord.



- Iran has also agreed under the terms of the seven-month extension to forego any other forms of enrichment, including laser enrichment. This commitment prevents Iran from developing another potential pathway to material for a weapon.

<http://www.al-monitor.com/pulse/originals/2014/12/irantermsofextensionnucleardeal.html#>

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Xinhua News.com – Beijing, China

## Iran Optimistic to Clinch Final Nuclear Deal: President

(Xinhua)

December 2, 2014

TEHRAN, Dec. 2 (Xinhua) -- Iran's President Hassan Rouhani expressed optimism over a potential comprehensive nuclear deal through constructive interaction with the world, Press TV reported on Tuesday.

"In the path of constructive interaction with the world, we will get the nuclear issue to a conclusion," Rouhani said on Tuesday.

The P5+1 group, the West, the East and the region all need to have constructive interaction with Iran, he said, adding that the powers have recognized the main aspects of the country's nuclear program.

"Today, the world accepts the uranium enrichment will be carried out on Iran's soil; the world accepts that we will have a heavy water reactor in Arak; the world accepts that we will continue research and development work; the world accepts that we will proceed with our activities at Fordow," Rouhani was quoted as saying.

The Iranian nation would achieve the final victory in the nuclear issue, he added.

The Iranian president said that the world has also come to the understanding that now it is time to end the "cruel" sanctions against the country.

After seven days of intensive nuclear talks which failed to meet the deadline for a comprehensive deal, the foreign ministers from the Islamic republic and the P5+1 group agreed last month to extend the deadline for another seven months, in an attempt to secure the prospects of a deal.

Based on the agreement, the interim Geneva deal, or the so-called Joint Plan of Action which was sealed on Nov. 24, 2013, will also be extended by June 30, 2015 with the fresh round of talks resuming this month.

The agreement provided further time and space for a framework deal by March 1 and a full agreement including all technical aspects by the end of June.

[http://news.xinhuanet.com/english/world/2014-12/02/c\\_127270998.htm](http://news.xinhuanet.com/english/world/2014-12/02/c_127270998.htm)

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International Business (IB) Times.com – Sydney, Australia Edition

## ISIS Threatens Use of Nuclear Bomb in London; UN Ambassador Warns of 'Weapons of Mass Destruction'

By Reissa Su

December 2, 2014

The Islamic State of Iraq and Syria militants have reportedly developed a nuclear weapon from the radioactive material they seized from the Mosul University in Iraq. ISIS bragged about the nuclear device on social media as a British extremist fighter claimed it would wreak havoc in London when it explodes.



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According to media reports, ISIS militants have stolen 40 kilogrammes of uranium in July and used it to make a "dirty bomb." The Mirror noted that British bomb expert Hamayun Tariq was identified as among the militants who issued threats to the West online. In 2012, he left his home in Dudley and went to the Middle East.

On his Twitter account under the Muslim name, Muslim al-Britani, he announced that ISIS has a dirty bomb and revealed they militants found radioactive material at the Iraqi university in Mosul. He went on to say ISIS will study what dirty bombs can do and talk about what happens when it is detonated in a public area.

In what may be viewed as a veiled threat, the British ISIS supporter added that it would be "terribly destructive" if it exploded in London. His account on Twitter has since been suspended after posting his comments. As a show of support, other ISIS fighters also posted on Twitter to confirm that militants have in their possession a bomb from radioactive material in Mosul.

Reports of ISIS having a nuclear device have alarmed the UN Ambassador to Iraq Mohamed Ali Alhakin. He wrote a letter to UN Secretary General Ban Ki-moon and revealed that ISIS has been taking nuclear material from areas where the group has taken over. The ambassador informed the UN that such material can be used to manufacture "weapons of mass destruction." Alhakin warned that nuclear materials, even in limited quantities, can enable terrorist groups like ISIS to use it in the militants' terror campaign with the help a weapons expert.

The Mirror speculates that if ISIS has a nuclear bomb, the group would more likely use it in Iraq or Syria rather than risk being caught when smuggling it into a Western country. Previous reports indicate that if ISIS was confirmed to have weapons of mass destruction or a nuclear bomb, U.S. President Barack Obama would not hesitate to send ground troops to destroy ISIS.

<http://au.ibtimes.com/articles/574600/20141202/isis-nuclear-bomb-weapons-mass-destruction-london.htm#.VH4fYyxARDy>

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Tasnim News Agency.com – Tehran, Iran

## **Zarif: Iran Nuclear Talks Very Close to Successful End**

December 02, 2014

TEHRAN (Tasnim) - Iranian foreign minister said the talks between Iran and the six world powers over Tehran's nuclear energy program are "very close to their successful end."

Speaking at a conference at Tehran University on Tuesday, Mohammad javad Zarif reiterated that the standoff over Tehran's peaceful nuclear energy program can only be settled through dialog.

"World has come to the conclusion that negotiation is the only solution to Iran nuclear issue," Zarif said, " A solution based on mutual respect which recognizes the rights and achievements of the Iranian nation is the only way to reach a deal."

Mohammad Javad Zarif underscored that Iran's nuclear program has never posed any threats to other countries reiterating that Tehran has never been after nuclear weapons.

"We believe that nuclear weapons cannot establish security but pose security threats indeed," he noted.

Iran's top nuclear negotiator also pointed to recent comments by the Supreme Leader of the Islamic Revolution Ayatollah Khamenei about the nuclear talks and said "as the Supreme Leader announced we will agree to a fair deal but will not accept bullying."

"In the (nuclear) negotiations, if sensible things are said and fair and wise arrangements are made, we will agree to them; but, Iranians, from the masses of the people to all officials, will stand up to excessive demands," Ayatollah Khamenei said back on Thursday.

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Imam Khamenei also said Iran is not against the extension of the nuclear talks for the same reasons it agreed to holding the negotiations.

“Of course, we will agree to any fair and rational arrangement. But we know that it the US government which needs the deal and will lose the most if no deal is made,” said the Leader.

Back in November, top diplomats from Iran and the Group 5+1 (Russia, China, the US, Britain, France and Germany) decided to extend talks on Tehran’s peaceful nuclear program for more seven months.

<http://www.tasnimnews.com/English/Home/Single/576204>

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The Daily Star – Beirut, Lebanon

## **U.N. Watchdog Seeks \$5.7 Million to Monitor Extended Iran Nuclear Deal**

By Fredrik Dahl, Reuters

Wednesday, December 3, 2014

VIENNA: The U.N. atomic agency says it needs an extra 4.6 million euros (\$5.67 million) from member states to finance monitoring of an extended nuclear deal between Iran and six world powers, a document seen by Reuters said on Wednesday.

Iran and the United States, France, Germany, Britain, China, and Russia failed to meet a Nov. 24 deadline for resolving a 12-year dispute over Tehran's nuclear program and gave themselves until the end of June 2015 for further negotiations.

As a result, a preliminary agreement reached late last year, under which Iran halted its most sensitive nuclear activity in exchange for limited sanctions easing, will remain in force.

The International Atomic Energy Agency (IAEA) - which has inspectors on the ground every day of the week - is tasked with checking that Iran meets its commitments under the accord.

In a confidential note to member states ahead of an extraordinary IAEA board meeting next week to discuss the issue, the U.N. agency said it estimated the cost of its extended monitoring work at 5.5 million euros.

A part of this would be covered internally and by earlier unspent contributions, but an additional 4.6 million euros "of voluntary extra budgetary contributions would be required".

IAEA Director General Yukiya Amano "invites member states which are in a position to do so to make the necessary funding available for the continuation of the agency’s monitoring and verification" in Iran, it added.

Because of the deal's political importance, diplomats have said there should be no problem raising the required funds.

Iran denies Western allegations it has been seeking to develop the capability to make nuclear weapons. But its refusal to scale back its uranium enrichment program has drawn international sanctions hurting its oil-dependent economy

The IAEA's workload has increased significantly under the interim accord. Inspectors now visit Iran's uranium enrichment facilities of Natanz and Fordow daily, compared to about once a week before. It has also procured and installed specialized equipment and carried out more analytical work.

The agreement, designed to buy time for negotiations on a final settlement, was initially due to run for six months from January but first extended in July and again last week.

The IAEA earlier this year asked for contributions of 6.5 million euros to cover its extra Iran-related costs. Amano last month said the IAEA's "verification effort in Iran has doubled".

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<http://www.dailystar.com.lb/News/Middle-East/2014/Dec-03/279772-un-watchdog-seeks-57m-to-monitor-extended-iran-nuclear-deal.ashx>

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Tasnim News Agency – Tehran, Iran

## **Iran's Strong Diplomacy in Nuclear Talks Due to Country's Defense Power: IRGC Commander**

December 04, 2014

TEHRAN (Tasnim) – Commander of the Islamic Revolution Guards Corps (IRGC) said Iran's defense power and the Islamic Revolution's inspiring role are the reasons for the country's robust diplomacy in nuclear talks.

Major General Mohammad Ali Jafari on Wednesday said Iranian negotiators' self-confidence and their firm stance in the nuclear talks are indebted to the revolution's inspiration and the defense and security power of the country's popular Establishment.

The senior commander underlined that the Iranian diplomatic apparatus has managed to stand against the excessive demands of the hegemonic powers thanks to the Islamic Republic's defense and security might, which originates from the revolutionary Iranians' faith in true Islam.

Iran and the Group 5+1 (permanent members of the UN Security Council plus Germany) have held talks at different levels over Tehran's peaceful nuclear program.

In the negotiations, the Iranian negotiating team has refused to give in to the other side's excessive demands and remained steadfast in defending the Iranian nation's rights.

In their last round of talks in Vienna, Iran and the world powers wrapped up a week of closed-door intense nuclear negotiations on November 24.

They aimed to tackle the remaining obstacles that exist in the way of reaching a final agreement.

At the end of the talks, the two sides decided to extend their discussions for seven more months.

They also agreed that the interim deal they signed in the Swiss city of Geneva last November remain in place during the course of the negotiations until July 1, 2015.

<http://www.tasnimnews.com/English/Home/Single/578411>

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The Times of India – Mumbai, India

## **Nuclear-Capable Agni-IV Test-Fired Successfully, has China in Sight**

Tamil News Network (TNN)

December 3, 2014

NEW DELHI: India's dissuasive nuclear deterrence against China got a tad more credibility on Tuesday with the country testing the Agni-IV ballistic missile, which has a strike range of 4,000km, from the Wheeler Island off Odisha coast in the morning.

The Agni-IV was tested in "its full deliverable configuration" by the tri-service Strategic Forces Command (SFC) in the first such user-trials, after one failed and three successful "developmental trials" over the last four years.

The actual operational induction of the missile, which was tested for a range of only 3,000km on Tuesday, will take another couple of years. DRDO scientists said there were no glitches during the missile's entire parabolic flight path, which was constantly monitored by long-range radars and electro-optical systems all along the coast, till its splash point in the Bay of Bengal.

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More fireworks are shortly expected over the Indian Ocean with the DRDO now gearing up for the third developmental test of the over 5,000-km Agni-V, the country's first true intercontinental ballistic missile (ICBM), in a month or so. The three-stage Agni-V is likely to be inducted by 2017.

The SFC has already inducted the short and intermediate range Prithvi and Agni missiles geared towards Pakistan, which has overtaken India both in terms of missiles and nuclear warheads with covert help from China and North Korea over the years.

The road-mobile Agni-IV and Agni-V, in turn, are specifically meant for deterrence against China, which can target any Indian city with its formidable inventory of missiles. Importantly, the Agni-V is now slated to be tested in its canister version, which will give the armed forces the operational flexibility to rapidly transport and fire it from anywhere they want, as reported earlier by TOI.

"With Prithvi and Agni-I, II, III missiles already in the arsenal, Agni-IV further extends the reach and enhances India's effective deterrence capability. Agni-IV is equipped with state-of-art avionics, 5th generation on-board computer and distributed architecture," said the DRDO.

DRDO scientists are also progressing ahead with their work on "manoeuvring warheads or intelligent re-entry vehicles" to defeat enemy ballistic missile defence systems as well as MIRVs (multiple independently targetable re-entry vehicles) for the Agni series of missiles. A single missile with a MIRV payload can deliver multiple nuclear warheads to different targets.

However, one worry that still remains is the lack of an operational submarine-launched ballistic missile (SLBM) to complete India's nuclear weapons triad. It will become a reality only after the indigenous nuclear-powered INS Arihant becomes fully operational. INS Arihant is slated to begin extensive sea trials, which will include test-firing of the K-15 (750-km) SLBM, in the near future, say officials.

<http://timesofindia.indiatimes.com/india/Nuclear-capable-Agni-IV-test-fired-successfully-has-China-in-sight/articleshow/45355075.cms>

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The National Interest.org – Washington, D.C.

OPINION/Feature

## **American Nuclear Strategy: The Case for a Minimal-Deterrence Policy**

*"The United States' overstuffed nuclear arsenal addresses a threat that no longer exists, and instead results in elevated risks with no added value."*

By Robert Gard and Greg Terryn

December 1, 2014

Critics of minimal deterrence, such as Keith Payne in a recent article in the *Washington Times*, accuse advocates of reducing the U.S. nuclear stockpile of viewing the world through rose-colored glasses, irresponsibly following ideological perceptions at the expense of American security. These charges represent true irony; few policies are more tainted with ideology than the advocacy of an outdated nuclear strategy with an excessive, ill-maintained arsenal of weapons.

The 2010 Nuclear Posture Review states: "[t]he fundamental role of U.S. nuclear weapons, which will continue as long as nuclear weapons exist, is to deter nuclear attack on the United States, [its] allies, and partners." Because of the vast and indiscriminate destructive power of nuclear weapons, there is a general consensus that their sole legitimate purpose is to deter the use of weapons of mass destruction by potential enemies; and that their use in war should be initiated only as a last resort to prevent the military defeat of the nation or an ally. These weapons clearly are irrelevant to current international security challenges such as nonstate terrorist expansion in Iraq and Syria, the Ebola virus in Africa or even Russian aggression in Ukraine.

But how many nuclear weapons are necessary for an effective, reliable deterrent?

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The United States currently has an arsenal of about 4,800 nuclear warheads, enough for an estimated 1,400-megaton cumulative yield of destructive power. That is 87,500 times the blast power of the bomb that devastated Hiroshima and equal to the blast yield of 1,400,000,000 tons of TNT. Put another way, it would only take one tenth of the 1,400 megatons we possess to decimate the fifty most-populated cities in the United States.[1] How much deliverable nuclear explosive power and destruction does it take to deter potential enemies? Obviously, under any conceivable scenario, the United States does not need a nuclear arsenal nearly this large.

In the midst of the Cold War, the United States adopted a nuclear counterforce strategy designed to disarm the remaining nuclear capabilities of the Soviet Union and ensure the survival of its counterattack capability in the event of nuclear aggression. This posture, mirrored by the Soviets, led to a decades-long nuclear arms race. While our current relationship with Russia is strained, it certainly does not rise to a Cold War level of risk of a nuclear exchange. Unfortunately, however, our nuclear planning has been driven largely by inertia, dependent on outdated scenarios implausible in today's world. As Lt. General James Kowalski, Vice Commander of the U.S. Strategic Command, stated in 2013, a Russian nuclear attack on the United States is such "a remote possibility" that it is "hardly worth discussing."

A detailed analysis of U.S. nuclear-deterrence requirements conducted by the Department of Defense, in cooperation with the departments of State, Homeland Security and Energy and the intelligence community, concluded that the United States could reduce the number of its deployed, strategic nuclear weapons by one third without degrading its nuclear deterrent. This analysis was concurred by the Joint Chiefs of Staff.

If instead of a counterforce strategy, the United States were to adopt a more practical and more stable minimal nuclear deterrent, it could significantly reduce its nuclear arsenal, along with the associated cost and risks, without compromising its security or that of its allies. For example, a 2012 study—chaired by former Vice Chairman of the Joint Chiefs of Staff, General James Cartwright, and with other responsible and knowledgeable former national-security officials such as committee members, including ambassadors Thomas Pickering and Richard Burt, then Senator Chuck Hagel and General (Ret.) Jack Sheehan—concluded that the United States could reduce its nuclear arsenal to 450 warheads deployed on nuclear submarines and bombers, with an additional 450 in reserve, without jeopardizing security.

There have been other responsible studies of the number of nuclear weapons necessary for an effective deterrent, ranging from 311 to 1000 warheads. The Federation of American Scientists and the Natural Resource Defense Council released a study in 2009 concluding that 500 warheads deployed on intercontinental ballistic missiles (ICBMs), nuclear submarines and bomber aircraft would be sufficient. A 2005 study conducted by Stanford physicist Sidney Drell and Ambassador James Goodby estimated a 500 warhead stock of operational nuclear weapons on submarines, ICBMs, and bombers, with an additional 500 warheads in a reserve "responsive force," would provide an effective nuclear deterrent. The lowest estimate of these studies, conducted by two members of the faculty of the Air University and an active duty Air Force officer planner, described a 311-warhead force deployed on 100 ICBMs, twelve nuclear submarines and nineteen bombers as a sufficient deterrent.

Adopting a smaller minimal deterrent nuclear force, however the United States chooses to define it, would also alleviate some of the major liabilities of maintaining the current arsenal. It is difficult to maintain high standards of safety and security throughout a large nuclear arsenal. The recent firing of two Air Force nuclear commanders along with other officers for incompetence, rampant cheating in both the Navy's and Air Force's nuclear programs, and a serious "Bent Spear" incident involving an accidental flight of six nuclear-armed cruise missiles across the United States without authorization or proper supervision, all highlight the inherent risks of maintaining a large nuclear arsenal.

Lieutenant General Kowalski, Commander of the U.S. Air Force Global Strike Command, articulated this very point best when he said, "the greatest risk to my force is an accident. The greatest risk to my force is doing something stupid." The current policy of maintaining our intercontinental ballistic missiles on high alert, to be launched on warning of an incoming nuclear attack, compounds the risk of an accident or a misunderstanding that could trigger a nuclear war. Minimal deterrence would not require such risky posturing; it instead relies on a survivable nuclear force that conveys the assurance of a massive retaliatory attack.

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While reducing the arsenal to a minimal deterrent level would lessen the risk of blunders and accidental launches, it can also help alleviate the budget pressures associated with the modernization of the nuclear force. Top government officials are in agreement that current plans to rebuild our nuclear arsenal, with a price tag of \$355 billion over the next decade and up to \$1 trillion over the next thirty years, are undoubtedly unaffordable. Pressing forward with current nuclear-modernization plans will drain funds from conventional forces, leaving our armed forces without the necessary funding to maintain combat readiness and current levels of operation. Reducing the arsenal would maintain a secure nuclear deterrent without syphoning funds from other essential programs.

The United States' overstuffed nuclear arsenal addresses a threat that no longer exists, and instead results in elevated risks with no added value. Shifting to a minimal deterrence policy, as many political and military observers have noted, addresses the inherent dangers and escalating costs of the current policy while maintaining a viable nuclear deterrent for both the United States and its allies. The current U.S. arsenal is too large, too unwieldy and too expensive. It's time to reduce that arsenal to a more practical size.

**Robert G. Gard Jr.** is a retired Army Lieutenant General and chairman of the board of the Center for Arms Control and Non-Proliferation. **Greg Terryn** is a Scoville Fellow at the Center for Arms Control and Non-Proliferation.

[1] Based on 4.7 mile blast radius for a 1 megaton bomb.

<http://nationalinterest.org/feature/american-nuclear-strategy-the-case-minimal-deterrence-policy-11755>

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The National Interest.org – Washington, D.C.

OPINION/Feature

## Forget Future Nukes: What About Iran's Missiles?

*Forget those atomic anxieties: Iran's missile program could create some interesting challenges if a conflict ever occurred.*

By Robert Farley

December 1, 2014

Last Monday, the international community and the Islamic Republic of Iran extended the deadline for negotiations over Iran's nuclear program. This extension signified failure to reach an agreement, while leaving some hope for the future. But whether or not the United States and Iran can come to an arrangement on the nuclear program, the conventional struggle for power in the Persian Gulf will continue. Like China, Iran has dedicated substantial resources to the development of anti-access/area denial systems. Unlike China, it's trying to do so on a shoestring budget.

Iran's anti-access systems have trailed those of Russia and China, but in some sense are more interesting than developments in the two larger countries. The idea that Russia or China, continental powers with massive defense-industrial bases and huge economies, should have the military wherewithal to deny military access to the United States is not, in itself, all that remarkable. Only the extraordinary dominance of the United States over the past twenty-five years has made the question of anti-access/area denial remotely interesting.

But Iran, a medium-sized country with access to enormous energy resources, is not one of the world's wealthiest or most powerful nations. If a country like Iran can develop an anti-access system sufficient to deter the United States, then the balance of offensive and defensive technology has surely shifted.

Like China and Vietnam, Iran has attempted to create a multifaceted anti-access/area denial system, including land-based, sea-based and air-launched missiles. This article examines four missiles that help constitute this system of systems and evaluates how these systems might work together in case of war.

### Raad Air Defense System

An anti-access system is no better than the surface-to-air missiles that can protect it from destruction. If U.S. and allied aircraft can operate with impunity, then they will destroy Iran's missile launchers, whether on land, aircraft

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or ships, in the first hours of any conflict. To this end, the Iranians have deployed a wide variety of surface-to-air missile systems.

Most of these systems are “veteran,” and not in a good way. However, the Iranians have recently fielded the Raad mobile SAM system, a development from older Russian technology. It can purportedly track and hit targets at up to 50 km, although Iranian claims of effectiveness are rarely reliable. The Raad system has capabilities very similar to those of the Buk SAM system that destroyed Malaysian Airlines Flight 17 earlier this year. This represents a significant, if evolutionary, improvement on the Vietnam-era defenses Iran had relied upon into the last decade. Iran also has a variety of short-range point-defense systems, but these won’t deter a concerted, long-range U.S. attack.

Iran has failed to convince either Russia or China to help upgrade its aging SAM system. If Iran took possession of a Russian S-300 or S-400 system, or a Chinese HQ-9 system, its prospects of defending against an American attack would improve dramatically.

### **C-802**

The most important cruise missile in the Iranian arsenal is the C-802 and its variants. Originally acquired from China, Iranian industry has developed the capacity to replicate and modify the missile. The C-802 is a subsonic, sea-skimming missile that carries a 165 kg warhead, enough to do serious damage to any warship. Several types of Iranian surface ships can fire the C-802, including very small fast-attack boats. Fighter and attack aircraft can also carry C-802 variants, as can Iranian Mi-17 helicopters.

In addition to missiles procured directly from China, Iran has developed two variants, the Noor and the Qader. The Noor has a slightly longer range (200 km), while some reports indicate that the Qader is optimized for land-attack. Given the wide range of platforms that can launch these missiles (including land-based batteries), they would certainly play a role in the opening stages of any war in the Gulf.

The Iranian navy could conceivably launch C-802s from its flotilla of three Russian Kilo-class submarines. However, although Kilo-class submarines in many navies operate anti-ship cruise missiles, there is no indication that the Iranians have developed such a capability. Reasons for this include the lack of access to high-technology equipment from Russia and China, as well as the difficulty of operating submarines within the Persian Gulf.

### **Fateh-110**

The Fateh-110 is the latest in Iran’s arsenal of short-range ballistic missiles. Carrying a 500 kg warhead, it can reach targets at up to 300 km range. The Fateh and its increasingly accurate brethren can, in sufficient numbers, cause a lot of damage to land targets all over the Persian Gulf. Used in numbers, and in conjunction with other types of ordnance, hyperaccurate ballistic missiles can do more than sink ships—they can also disrupt and destroy land-based military installations, infrastructure and other valuable targets.

Estimates on the accuracy of the Fateh-110 range from a CEP of 8.5 meters to 100 meters, which is significant. Still, a volley even at the lower-accuracy ranges could give the Gulf’s military and infrastructure planners a very bad day. As accuracy increases, the number of missiles needed to deal a devastating blow decreases. Only sophisticated missile defenses could have much hope of defeating such an attack. The Iranians can also combine the Fateh and its brethren with land-attack cruise missiles in order to create a very difficult defensive problem.

### **Fars ASBM**

Iran claims that it has deployed anti-ship ballistic missiles, and the Pentagon seems to concur with that claim. Earlier this year, a classified Department of Defense report on Iranian missile capabilities apparently included claims that Iran has had some success with the Khalij Fars anti-ship ballistic missile, a short-range weapon that, if functional, could threaten American ships operating in the region. However, the report gave few unclassified details regarding the missile’s capabilities and deployment schedule. The missile is reportedly based on the Fateh-110, but includes terminal electro optimal technology (a visual matching system) that could guide it into American ships.

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An August 2014 CSIS report expressed skepticism about the notion that Iran could usefully employ an anti-ship ballistic missile system. Iran has none of the extensive sensor and communications infrastructure necessary to ensure targeting. Even a ballistic missile capable of terminal homing would need some ISR support; the Iranians likely do not have enough missiles to simply fire them at areas in which they suspect U.S. ships to operate. Moreover, the likely flight characteristics of the Khalij Fars make it an ideal target for Aegis-based missile defense systems.

Moreover, there is little indication that the Iranians have exhaustively tested such weapons, or tried to integrate them into a broader anti-access strategy. This problem afflicts the entire Iranian military establishment; it lacks funds for training and maintenance, and its readiness levels are low.

### Conclusion

The big problem with assessing Iranian military capability is that both the Iranians and the Americans seem to have a vested interest in overstating Iranian capabilities. As with many countries that wish to deter attack from a more powerful adversary, the Islamic Republic has a strong interest in overstating its own capabilities, which is why Iranian media regularly engages in clumsy efforts to suggest that Iran has mastered drone, stealth and missile technology. On the American side, inflating the threat from Iran provides a ready narrative for organizations that seek funding and resources, and Congress has proven very receptive to threat-mongering about Iran.

There's no question that Iran's anti-ship systems are less sophisticated than those fielded by China. The question is how anti-access systems scale up and down. The Iranian case would seem to suggest that they scale down poorly. China has developed an integrated anti-access system that can threaten to strike U.S. land and sea assets from multiple launchers and multiple directions, potentially with overwhelming numbers. Together with increasingly sophisticated ISR capabilities, this means that the PLA can threaten to effectively overwhelm U.S. tactical defenses and disable American offensive capabilities.

Iran has anti-access weapons, but while Iran can damage U.S. allies and U.S. military forces, it can't disrupt America's offensive military machine. The relationship between resources and fighting capability is curved upwards; it is not linear. Iran has certain geographic advantages in that enemy bases are within easy striking range, but American carriers, destroyers and submarines can operate effectively from beyond the reach of even the most advanced Iranian systems, destroying Iranian aircraft, submarines and surface ships before they can reach firing distance. Long-range American bombers, as well as short-range aircraft with refueling support, can attack Iranian targets, even if Iran wreaks havoc on local bases with its cruise and ballistic missiles.

The Iranians can potentially raise the costs for the Americans, but unlike the Chinese, they cannot hope to keep the United States out. If Iran acquires genuine, long-range ASBMs and cruise missiles, along with the ISR systems needed to support them, then we can begin to think about an effective Iranian deterrent. Even then, Iran will need to radically improve its air-defense network, as well as the defensive and offensive capacity of its air force. Until that time, the Islamic Republic will remain a manageable military problem for the United States.

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<http://nationalinterest.org/feature/forget-future-iranian-nukes-what-about-irans-missiles-11753>

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U.S. Naval Institute (USNI) News.org – Annapolis, MD

OPINION

## Opinion: North Korea's Sea-Based Deterrent

By Debalina Ghoshal

December 1, 2014

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Recent reports that North Korea is developing submarines based on obsolete Golf-II class Soviet-era submarines has gained worldwide attention. However obsolete, it is reported that North Korea had invested its time in “examining and replicating” the missile-launch system of the Soviet-era subs.

Hence, these submarines would be able to fire ballistic missiles. In fact, reports confirm that Pyongyang already is developing a vertical-launch system for submarine launched ballistic missiles (SLBMs). Raising further concerns about that is the fact that North Korean ballistic missiles could be armed with nuclear warheads.

Reports also have confirmed that Pyongyang does have the capability to miniaturize nuclear warheads, which could further enable them to fit nuclear-capable submarine launched ballistic missiles on those submarines. Hence, nuclear-capable ballistic missiles mounted on submarines on patrol could further jeopardize stability in the North East Asian region. Though the submarines at present may not be able to launch missiles that could hit targets in the United States, the missiles could possibly target forward-based U.S. forces in the Asia Pacific Region.

Just at the moment when China, the United States, South Korea and Japan are raising concerns over Pyongyang’s nuclear weapons program and vouching for denuclearization of the Korean Peninsula, this news comes surely as way to tell the world that Pyongyang is in no mood to give up its nuclear program, and that it is seeking a survivable nuclear force in order to enhance its nuclear deterrent capability. In 2013, Pyongyang, in a state run newspaper *Rodong Sinmun* also made it clear that denuclearization of the Korean Peninsula is not a possibility unless the world is denuclearized.

Of course the most pertinent question now is whether the submarines can be made successfully operational. That definitely would remain a difficult jigsaw puzzle to solve. It is a known fact that any state that aspires to possess nuclear weapons also aspires to develop a sea-based nuclear deterrent capability in order to enhance counterstrike or second-strike ability. Thus Pyongyang’s desire to acquire a sea-based nuclear deterrent is not surprising.

However, the submarines are neither ship submersible ballistic nuclear (SSBN) submarine nor is it powered by air independent propulsion system (AIP); they are conventional diesel-powered boats. Because the submarines have been reverse-engineered from the obsolete Golf-class submarine, there is a chance that the submarine could be defeated by modern anti-submarine techniques, therefore reducing North Korea’s ability to retaliate.

Pyongyang has been developing both liquid- and solid-fuel propelled land-based ballistic missiles. Hence, the SLBM could either be solid-fuel propelled or liquid-fuel propelled. However, what should be of concern is whether North Korea can successfully fit nuclear-capable ballistic missiles on their submarines.

There are some issues worth pondering. First, there would be immense pressure on its own command and control system which definitely is not experienced enough to handle sea-based nuclear deterrence. Secondly, North Korea could tend to initiate a first-strike on its adversaries if there were an assurance that at least one counter-value target of the adversary could be put to threat; the zeal to launch a first-strike can be further strengthened if there were a capability to retaliate also.

Hence, a sea-based nuclear deterrent capable of reaching targets in the United States or capable of hitting U.S. forward bases also would enhance the deterrent capability of North Korea’s land-based ballistic missiles. That is because while the land based ballistic missiles can be used for a first strike, Pyongyang could preserve its sea based nuclear deterrent capability for a second strike. Even if Pyongyang does not adopt a first-use policy, sea-based nuclear deterrent capability would enhance its counter-strike capability and deter adversaries from launching any kind of attack whether conventional or nuclear.

Despite U.N. Security Council resolutions, Pyongyang has continued to develop ballistic missiles and also conducted nuclear tests. Not only that, Pyongyang has time and again threatened both Seoul and Washington with nuclear attack. Hence, there is minimal doubt that Pyongyang is sure to acquire long-range submarine launched missile capability to target the United States. That is more true given that it has already mastered the technology of developing land-based missile systems of 10,000 kilometers.

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Still, when all is said and done, there is little doubt that it would take Pyongyang some years to develop a credible sea-based nuclear deterrence.

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<http://news.usni.org/2014/12/01/opinion-north-koreas-sea-based-deterrent>

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Defense News.com – Washington, D.C.

OPINION/Commentary

## **Commentary: 21st Century Arms Control**

December 2, 2014

By JAMES BLACKWELL

Tom Collina and Kingston Reif, who published an op-ed in the Nov. 3 issue about nuclear weapons, are responsible arms control advocates. We need from them less about the Cold War and more on 21st century arms control.

They did get this one correct: "...Cold War threats and budgets that sustained the stockpile in the past are long gone." Presidents Bill Clinton, George W. Bush and Barack Obama have shifted US nuclear posture, planning and even employment guidance away from the Cold War construct and toward 21st century threats, including rogue states, terrorists and proliferation of weaponizable uranium and plutonium.

The United States has reduced its stockpile by 85 percent and permanently shut down its Cold War complex for producing weapons grade uranium and plutonium, even as Russia and China modernize and expand their nuclear arsenals.

Nevertheless, their commentary perpetuates the myth that the US nuclear enterprise is stuck in the Cold War. Their proposed unilateral nuclear weapons reductions are dangerous. Let me address two of the strawmen they set up.

Collina and Reif implicitly recognize the fact that the US, alone among nuclear armed states, has taken an acquisition holiday in its nuclear arsenal. But their proposal for a less ambitious modernization program is fraught with risk. We can acknowledge any number of urgent threats that the defense budget could be robbed to address, but only one type of weapon threatens our very existence: nuclear weapons.

Moreover, it's not so easy to shift funds from nuclear programs to conventional weapons. Much of the nuclear arsenal modernization program is in the Department of Energy, unreachable to the DoD. For example, DoE's National Nuclear Security Administration will spend upwards of \$8 billion between now and 2028 to modernize the B-61 bomb.

Collina and Reif acknowledge this weapon needs to be refurbished but assert that it can be scaled back to save \$4 billion. This money is controlled by the House and Senate Energy committees, not the Armed Services committees. So when money is made available to these committees, either by reductions in nuclear weapons programs or by transfer from the Defense Department, those funds cannot be reprogrammed to conventional weapons.

Likewise, the impositions of the Budget Control Act prohibit the transfer of funds across programs. Thus, in 2013, the Air Force grounded 13 combat squadrons because it had no money to fly them, while at the same time the Congress directed the Air Force to make \$10 million available to support the National Commission on the Structure of the Air Force.

As the National Defense Panel reported, the problem is not with defense budget priorities; it is that defense budgets are too low.

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Their second strawman is the notion that the US could retreat to a minimal deterrence posture. I don't know if 1,550 or 1,000 operationally deployed strategic weapons are sufficient. Maybe we could negotiate with the Russians to go down to 1,000 but that's not very likely. Moreover, the Russians maintain thousands of non-strategic nuclear weapons that our allies perceive as an existential threat. Our arsenal must also assure allies that it can deter for them as well as for us.

The greatest myth Collina and Reif perpetuate is that nuclear weapons are hugely expensive. They are not. During the Cold War, nuclear deterrence was far cheaper than conventional defense. The Air Force spends less than 5 percent of its budget to provide two legs of the strategic nuclear triad, all of its extended deterrent and most of the nuclear command, control and communications infrastructure.

The proposed \$70 billion cut would be a unilateral reduction that would make the world safer only for more conventional wars and tempt adversaries who already contemplate launching a first strike.

We would not be able to maintain a continuous at-sea survivable nuclear deterrent with less than 12 Ohio-class replacement submarines. Delaying bomber replacement would violate everything we know about defense acquisition; stretching out a program only increases cost. And canceling the nuclear cruise missile program would eliminate a capability to reach targets in an anti-access/area-denial environment.

We need arms control experts to stop jousting with imagined giants, return to their roots and develop 21st century approaches to arms control. Here are some suggestions:

- Persuade North Korea to return to the Nuclear Non-Proliferation Treaty.
- Convince Russia to reduce its massive arsenal of non-strategic nuclear weapons and comply with its Intermediate-Range Nuclear Forces Treaty obligations.
- Move forward on a no-kidding fissile material cut-off treaty in the UN Conference on Disarmament.
- Expand on the success of the Proliferation Security Initiative
- Weigh in with analysis on emerging efforts to develop a ban on all land-based missiles.

Solutions to these threats rest as much in arms control as in weapons. Ronald Reagan and Mikhail Gorbachev took arms controllers' well-developed approaches and eliminated an entire class of weapons. We'll figure out a way to afford nuclear weapon modernization. We need the Tom Collinas and Kingston Reifs of today to put their minds to the hard work of shaping arms control approaches that will work in the 21st century.

*Blackwell is special adviser to the assistant chief of staff for strategic deterrence and nuclear integration, headquarters, US Air Force. These views represent only those of the author.*

<http://www.defensenews.com/apps/pbcs.dll/article?AID=2014312020024>

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The Washington Post – Washington, D.C.  
OPINION/The Monkey Cage

## **Why Nuclear Superiority Matters for Compellence**

By Matthew Kroenig, Miriam Krieger and Hans Noel

December 3, 2014

As diplomats work on a comprehensive nuclear deal to keep Iran from the bomb, Russia's nuclear saber rattles in ways not seen since the 1980s, and North Korea, China, India and Pakistan expand and modernize their nuclear arsenals, the role of nuclear weapons is returning to the center of both foreign policy and scholarly debates. Some of the most basic questions both groups would like to answer include: Do nuclear weapons matter? More specifically, can countries use nuclear weapons to deter and compel adversaries short of launching a nuclear



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attack? And, finally, does nuclear superiority, an advantage in the size and sophistication of a nuclear arsenal relative to that of an opponent, provide a coercive edge?

The answer to these questions will help inform our understanding of several vital questions: how easy it will be to persuade Tehran to forego a nuclear weapons capability; to what lengths the international community should go to put verifiable limits on Iran's nuclear program; how concerned Washington should be about an increased emphasis on nuclear weapons in potential adversaries' posture and doctrine; and whether the United States should remain committed to maintaining a robust nuclear arsenal.

To better inform these deliberations, this post reports the results of our new academic paper that finds that nuclear weapons are indeed an important factor in international politics. In particular, it shows that nuclear superiority increases a state's ability to engage in international compellence.

(For those who may be wondering, compellence is typically defined as a military threat designed to change the international status quo and is generally thought to be more difficult than deterrence, a military threat to preserve the status quo).

The previous state-of-the-art in academic studies on this issue was reviewed in *The Monkey Cage* in a mini-symposium earlier this year. One study showed that nuclear-superior states are more likely to achieve their basic goals in international crises, while another demonstrated the opposite: Nuclear-armed states are no more likely to issue successful compellent threats than similar non-nuclear states. In other words, the results were inconclusive.

We decided to investigate this matter further. We saw several shortcomings with the study that found that nuclear weapons don't matter, and our research sought to improve upon these limitations.

Using the exact same data (the Militarized Compellent Threat dataset) as the previous study, our basic finding is unambiguous: The nuclear balance of power is fundamental to patterns of international compellence.

To begin, we show that the previous study correctly reported that the rate of compellent success for non-nuclear challengers since 1945 (16 compellent successes in 69 attempts) is not statistically different from the success rate of nuclear-armed challengers (10 of 49). Unfortunately, however, the study also overlooked much of what is interesting about nuclear weapons' effect on compellence.

First, nuclear weapons embolden states to attempt compellence in the first place. Nuclear-armed states attempt compellence roughly once in every 1,000 opportunities, whereas non-nuclear states have attempted compellence only about once in every 16,000 opportunities.

Second, nuclear-armed states are much more likely to achieve compellent success precisely because they are more willing to try. In social scientific terms, there is a large "selection effect." The ratio of compellent successes to possible opportunities is roughly one in 5,000 for nuclear-armed states, but only one in 69,000 for non-nuclear states. As soccer coaches often quip, you miss all of the shots you don't take.

Third, these effects are most evident when narrowing our focus to dyads (pairs of states) with at least one nuclear power. After all, these are the most relevant cases for assessing the effect of nuclear superiority on compellence. We find that nuclear-superior states (states that enjoy a nuclear advantage either because they possess nuclear weapons and their opponent does not, or because they possess more nuclear warheads than a nuclear-armed adversary) have attempted 49 compellent threats and successfully compelled opponents in 10 separate episodes.

In contrast, nuclear-inferior states (non-nuclear states facing nuclear-armed adversaries or nuclear-armed states against opponents with larger nuclear arsenals) have only even attempted compellence three times and were successful only once. Moreover, in our follow-up examination of this single success (Turkey supposedly compelling Great Britain as they were working together to restore order on Cyprus in 1963), we were unable to find any evidence of a militarized compellent threat, to say nothing of a successful one, leading us to doubt whether an inferior state has ever successfully compelled a nuclear-superior opponent.

Our finding does not result because certain aggressive countries build large nuclear arsenals and bully other states. Rather, we show that the exact same countries behave very differently depending on whether they are in a

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position of superiority or inferiority. The table below lists the compellent threats issued by nuclear-armed states from 1945 to 2001. The column on the left lists the compellent threats made by each state against countries with more nuclear weapons and, on the right, the compellent threats against states with fewer nuclear weapons.

Table. List of Compellent Threats by Nuclear-Armed States, 1945-2001

Country	Threats against Nuclear Superior States		Threats against Nuclear Inferior States	
	Nuclear but inferior	Nonnuclear	Nuclear but inferior	Nonnuclear
United States	0	15	2	0
Soviet Union	0	3	4	0
Great Britain	0	9	0	0
France	0	3	0	0
China	0	3	0	0
Israel	0	3	0	0
South Africa	0	6	0	0
India	0	0	1	0
Pakistan	0	0	0	0
Subtotal	0	42	7	0
<b>Total</b>	<b>0</b>		<b>49</b>	

The results are stunning. Since 1945, nuclear-armed states have attempted to compel inferior states 49 times and have never once tried to compel a superior state. In other words, for nuclear powers, nuclear superiority is a necessary condition for even attempting compellence.

In sum, nuclear-superior states are much more likely to achieve compellent success because they are more willing to try. In this way, nuclear compellence is not that different from other aspects of life. As Thomas Edison put it, "The most certain way to succeed is always to try just one more time."

Matthew Kroenig and Hans Noel are associate professors in the Department of Government at Georgetown University. Miriam Krieger is a PhD student in the department.

<http://www.washingtonpost.com/blogs/monkey-cage/wp/2014/12/03/why-nuclear-superiority-matters-for-compellence/>

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Gulf News.com – Dubai, U.A.E.

OPINION/Columnist

## America Needs to Shrink its Nuclear Arsenal

*If it wants its nuclear stockpile to truly serve its interests in a strategic, balanced manner, Americans have to change course*

By Dianne Feinstein

December 5, 2014

During the Cold War, the United States and the Soviet Union were mired in an arms race. The antagonism led each side to stockpile more than 30,000 nuclear weapons to prevent the other from gaining an advantage.

Today, however, nuclear weapons are seen as a financial burden and a threat to global security. Furthermore, our nuclear stockpile is competing for limited defence spending, money that could be used to address more pressing challenges such as the fight against Daesh (Islamic State of Iraq and the Levant) and defending against cyber attacks.



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That's why the amount the US spends to maintain and modernise its nuclear arsenal is so staggering. Over the next decade, the Congressional Budget Office reports that the US will spend \$355 billion (Dh1.3 trillion) on nuclear weapons. We're holding far more nuclear weapons than are necessary, and the cost is undermining other national security priorities. It's time we take a long look at how we can responsibly reduce our stockpile.

The US currently maintains 4,804 nuclear weapons. If you include retired weapons that are awaiting dismantlement and the thousands of components in storage, the US has the equivalent of around 10,000 weapons. When you consider that the weapons we maintain today are up to 100 times more destructive than the ones used in Hiroshima and Nagasaki, it becomes clear that the only value they offer is in deterring a nuclear attack.

Meanwhile, efforts to reduce the stockpile are faltering. Over the past five years, the US stockpile has been reduced by only 309 warheads, the slowest five-year reduction in more than two decades. More worrisome is the staggering cost of these weapons. In just the past three years, the budget for simply maintaining nuclear warheads and production facilities has grown from \$6.9 billion to \$8 billion a year, almost a 16 per cent increase.

#### Opposite direction

In an era of budget "sequestration," when we're supposed to cut the defence budget by about \$29 billion per year, our nuclear modernisation plans are taking us in the opposite direction. We stand to spend \$1 trillion on the programme (including the cost of new nuclear-capable submarines and long-range bombers) over the next three decades, according to a study by the James Martin Centre for Nonproliferation Studies. The US nuclear programme hasn't seen this level of funding since the 1980s, when we were designing, testing and building new nuclear weapons and the stockpile was three times larger than it is today.

Put simply, the current level of spending on nuclear weapons is unnecessary and unsustainable. The New Strategic Arms Reduction Treaty (Start) treaty between the US and Russia, which will bring both countries down to 1,550 deployed nuclear weapons by 2018, is a good first step toward reducing our stockpile. But we need additional action, as the treaty addresses only deployed weapons and not what is known as the hedge, the collection of spare nuclear weapons. Of our stockpile of 4,804 weapons, only 1,600 are currently deployed, which means there are 3,204 backup weapons. We maintain this hedge in case of problems with the deployed weapons or if world events require additional deployments. Having reserve weapons may be smart policy, but maintaining two spares for each deployed weapon is excessive.

Even our generals are telling us we have too many nuclear weapons. We can reduce these reserve weapons without the painstaking task of negotiating further arms-control treaties. We can do so without negatively affecting our national security or our global deterrence. And doing so could save hundreds of millions of dollars a year.

If we want our nuclear stockpile to truly serve the interests of our country in a strategic, balanced manner, we have to change course. That means pursuing creative options such as reducing the weapons held in reserve. We also have to realign our budget priorities for the decades ahead to reflect today's realities.

We live in 2014, not 1980. The world is a very different place, and we need to plan accordingly.

— *Washington Post*

*Dianne Feinstein, a Democrat, represents California in the Senate.*

<http://gulffnews.com/opinions/columnists/america-needs-to-shrink-its-nuclear-arsenal-1.1422610>

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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

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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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