Feature Report

“2019 Missile Defense Review”. Published by Department of Defense; Jan.17, 2019


The 2017 National Security Strategy (NSS) states, "Our fundamental responsibility is to protect the American people, the homeland, and the American way of life." Missile defense is an essential component of U.S. national security and defense strategies. It contributes to the deterrence of adversary aggression and the assurance of allies and partners. It also strengthens U.S. diplomacy, protects against missile attacks to limit damage, supports U.S. military operations if deterrence fails, hedges against future uncertainties and risks, and helps to preserve U.S. and allied freedom of action to meet and defeat regional adversary aggression.

This 2019 Missile Defense Review (MDR) is consistent with the 2017 NSS, the 2018 National Defense Strategy (NDS), and the 2018 Nuclear Posture Review (NPR). It describes the policies, strategies, and capabilities that will guide the Department of Defense (DoD) missile defense programs to counter the expanding missile threats posed by rogue states and revisionist powers to us, our allies, and partners, including ballistic and cruise missiles, and hypersonic vehicles. It recognizes and highlights the important changes that have taken place in the security environment since the previous 2010 Ballistic Missile Defense Review was conducted, as well as the considerable uncertainties about the future threat environment.

This 2019 MDR is based on recognition that the threat environment is markedly more dangerous than in years past and demands a concerted U.S. effort to improve existing capabilities for both homeland and regional missile defense. This effort will include a vigorous science and technology research program in addition to the exploration of innovative concepts and advanced technologies that have the potential to provide more cost-effective U.S. defenses against expanding missile threats.

This 2019 MDR also emphasizes that the missile threat environment now calls for a comprehensive approach to missile defense against rogue state and regional missile threats. This approach integrates offensive and defensive capabilities for deterrence, and includes active defense to intercept missiles in all phases of flight after launch, passive defense to mitigate the effects of missile attack, and attack operations during a conflict to neutralize offensive missile threats prior to launch.
TABLE OF CONTENTS

NUCLEAR WEAPONS
- **Air Force Sends B-2 Stealth Bombers to Hawaii for Exercises** (Military.com)
  The nuclear-capable aircraft from Whiteman Air Force Base, Missouri, arrived as part of a routine U.S.
  Strategic Command-led Bomber Task Force mission, Air Force officials said Friday.

US COUNTER-WMD
- **Trump Review Calls for More Missile Defenses But No Space Weapons -- Yet** (Politico)
  The two-year review, which was ordered by President Donald Trump just days after he took office, calls
  for a third suite of interceptors located on U.S. territory to defend against intercontinental ballistic
  missiles.
- **Nebraska Leads $11M Study to Develop Radiation Exposure Drugs** (Nebraska Today)
  Nebraska has the lone research center entrusted by the military to work on chemical, biological,
  radiological and nuclear threats.
- **Smiths Detection Named Developer of DOD's Next Chemical Agent Detector** (Homeland
  Preparedness News)
  They will create a miniaturized device that can detect, identify, report and alarm those under threat of
  dangerous vapors and aerosols.

US ARMS CONTROL
- **Kremlin Says Russia Is Ready to Work with US to Save Nuclear Arms Treaty** (The Hill)
  Lavrov said that, during talks in Geneva earlier this week, he offered to allow U.S. experts to inspect a
  missile that the White House says violates the deal, but that the offer was declined, according to The
  Associated Press. The U.S. negotiators instead insisted that the missile be destroyed.
- **Russia, US: No Progress in Talks Over 1987 Nuclear Arms Treaty** (VOA)
  The three-decade-old Intermediate-Range Nuclear Forces Treaty bans production, testing and deployment
  of land-based cruise and ballistic missiles with a range of 500 to 5,500 kilometers.
- **Iran Moving Toward Enriching Nuclear Fuel, Top Official Says** (The Hill)
  The nuclear deal that Iran reached in 2015 with world powers prevented Tehran from enriching uranium
  above 3.67 percent. Iran was reaching 20 percent before the deal.

COMMENTARY
- **Whence Korean Denuclearization?** (Pacific Forum)
  The North Koreans have made it clear they want to deal with President Trump himself, probably correctly
  assessing that he is more likely to make concessions or take significant risks than are his subordinates.
- **Russia’s Hypersonic Nuke Is a Warning to America** (National Interest)
  The real danger, however, is that some senior U.S. officials seem to believe American defenses such as the
  U.S. Navy’s SM-3 and the Army’s Ground-Based Midcourse Defense missile-interceptor can stop a weapon
  such as Avangard.
- **North Korea: Deterrence Roulette or Preventive War?** (Real Clear Defense)
  So, while a deterrence option that effectively eliminated the risk of a nuclear attack would be the right way
  to deal with the North Korean nuclear threat, that option does not exist.
NUCLEAR WEAPONS

Military.com (San Francisco, Calif.)

Air Force Sends B-2 Stealth Bombers to Hawaii for Exercises
By Oriana Pawlyk
Jan. 11, 2019

Three B-2 Spirit stealth bombers and more than 200 airmen landed this week at Joint Base Pearl Harbor-Hickam, Hawaii, for training in the Pacific.

The nuclear-capable aircraft from Whiteman Air Force Base, Missouri, arrived as part of a routine U.S Strategic Command-led Bomber Task Force mission, Air Force officials said Friday.

"This training is crucial to maintaining our regional interoperability," said Lt. Col. Joshua Dorr, 393rd Bomb Squadron director of operations, in a release. "It affords us the opportunity to work with our allies in joint exercises and validates our always-ready global strike capability."

Last year, B-2 Spirit bombers conducted their first-ever rotation to Hickam and executed missions with their F-22 Raptor stealth fighter counterparts, giving pilots a sense of how the two aircraft would pair in a high-threat environment.

The latest deployment marks only the second time B-2s have deployed to Hawaii, as the Spirit often deploys instead to Andersen Air Force Base, Guam, when training with Pacific allies and partners.

During their last stint in Hawaii, training focused on integrating with F-22s from the 199th Fighter Squadron, 154th Wing, under the Hawaii Air National Guard. F-22s escorted the heavy bombers in simulated exercises, providing extra situational awareness during the mission, officials said at the time.

Additionally, airmen supporting the operations also practiced hot-pit refueling -- or keeping aircraft engines running on the flight line while the plane takes on fuel -- and loading inert BDU-50 bombs in the B-2’s bomb bay, the Air Force said.

A B-2 also flew to the Pacific in 2017 to demonstrate the nation's commitment to partners and allies while North Korea conducted missile tests.

Its presence at the time marked a return for the B-2 -- capable of carrying both conventional and nuclear weapons -- to the theater since a trio of the bombers wrapped up training exercises earlier in the year with the Australian Air Force.


Return to top
US COUNTER-WMD

Polito (Washington, D.C.)

Trump Review Calls for More Missile Defenses but No Space Weapons -- Yet

By Bryan Bender

Jan. 16, 2019

The Trump administration’s long-awaited missile defense review that will be released Thursday recommends additional deployments of anti-missile systems at home, abroad and possibly in space, according to a senior administration official.

The two-year review, which was ordered by President Donald Trump just days after he took office, calls for a third suite of interceptors located on U.S. territory to defend against intercontinental ballistic missiles. It also recommends additional study of the controversial idea of placing weapons in orbit to strike enemy missiles launched from Earth.

The document, which will be unveiled by Trump at the Pentagon on Thursday morning, is being billed by the White House as the first comprehensive analysis of the global missile threat since 2010 and is geared heavily toward blunting advancing Russian and Chinese arsenals, not just those of Iran or North Korea.

"In the time between, we've seen a significant change to the threat environment, an environment in which potential adversaries have been rapidly developing, fielding a much more expanded range of new and offensive missiles," the official explained late Wednesday in a teleconference previewing the report that was organized by the White House.

The new road map will address ballistic missiles, cruise missiles, and more cutting-edge capabilities such as hypersonic and directed-energy weapons.

It is intended as “a new strategy and posture that is going to strengthen our current missile defense capabilities and to make the case for urgent investment into new and advanced missile defense concepts and capabilities,” the official said.

A major focus is the enhanced role of space technologies — for both early warning of missile launches and possibly to attack missile sites or deflect them in flight.

For example, the official said a “space-based layer of sensors is something we are looking at to help get early warning, tracking, discrimination of missiles when they are launched.”

The review also calls for more research on space-based defense systems, including concepts such as interceptors launched from space or directed-energy weapons orbiting the Earth that could target missile launches.

“We have not made a concrete decision on whether or not to deploy yet,” the official said, noting the review “does not direct the fielding.”

That came as a relief for some arms control advocates who see such a move as highly destabilizing.

"It looks like wiser heads have prevailed, and the administration is going to forgo a Trump space wall," said Laura Grego, a senior scientist in the Global Security Program at the Union of Concerned Scientists. "That's great news."
But "space-based capabilities are a significant point of emphasis," the official added during the call. "It is something we want to invest in and we think that is very important for going beyond" current defenses. "Space is key to kind of the next step of missile defense."

The review also details ways that current anti-missile capabilities could be expanded, including "what we are already doing to enhance our posture with current capabilities, where we think we could add more," the official explained.

It identifies "where we can make incremental improvements to existing capabilities and it discusses both homeland and regional postures," or modifications on where and how current systems are deployed in the United States and in allied nations.

Indeed, the review will lend new support to the proposal to construct a third interceptor site in the United States to defend against ICBM attacks on the homeland.

The so-called Ground-Based Midcourse Defense program, managed by Boeing, currently has missile interceptors located at Vandenberg Air Force Base in California and Fort Greely, Alaska. The Pentagon has been considering an additional site in either New York, Ohio or Michigan.

The missile defense review is calling for such a site to be built "if it is determined that is something that would really enhance our posture with respect to Iran," the official said. "But no decision has been made about a third interceptor site yet."

"It sounds like there will almost certainly be a significant increase in the existing homeland and regional defense systems," said Grego. "And there will almost certainly be new programs to try to counter Russian and Chinese cruise missile threats against the homeland and future hypersonic missiles."

"But the U.S. defenses will not be taking on the sophisticated Russian and Chinese ballistic missile arsenals writ large," she added. "That's great news, too, as that of course would be a fool's errand. It would be technically unachievable and economically ruinous, and it would increase risks of nuclear use."

The White House is planning a big rollout of the review Thursday with Vice President Mike Pence, National Security Adviser John Bolton, and much of the Pentagon leadership and top officials from the active-duty and National Guard.

https://www.politico.com/story/2019/01/16/trump-missile-review-more-defenses-no-space-weapons-1106978

Return to top

Nebraska Today (Lincoln, Neb.)

Nebraska Leads $11M Study to Develop Radiation Exposure Drugs

By University Communications

Jan. 13, 2019

The U.S. Department of Defense has turned to the University of Nebraska to jumpstart the development of drug therapies to protect military service members from the effects of radiation exposure.

In an environment where for-profit pharmaceutical companies are often reluctant to embark upon financially risky drug discovery efforts, the unique four-pronged partnership established by the university and the Department of Defense could shorten the U.S. military’s wait for drugs that prevent and counteract the effects of radiation exposure.
“It’s an exciting collaboration among the federal government, our state university and two of its premier research campuses — University of Nebraska Medical Center and the University of Nebraska–Lincoln — and consultants from private pharma who are Nebraska alumni,” said David Berkowitz, professor of chemistry.

This team operates under the auspices of the university's National Strategic Research Institute, one of 13 university-affiliated research centers. Nebraska has the lone research center entrusted by the military to work on chemical, biological, radiological and nuclear threats.

“This research represents the broad capacity of the University of Nebraska and its alumni consultants to tackle potentially hazardous radiation exposures around the world,” said Lt. Gen. (Ret.) Robert Hinson, founding executive director of the National Strategic Research Initiative.

The University of Nebraska project for the Defense Health Agency, and in collaboration with Armed Forces Radiobiology Research Institute, has reached a second increment — potentially awarding nearly $11 million in federal funding over the next five years. Nebraska researchers will look for therapeutics candidates the U.S. military would need to protect troops from radiation in case of exposure, as in a nuclear accident or a nuclear weapons incident.

Leveraging the full, collaborative strength of a united university system — multiple campuses, a network of successful alums — directed by the Department of Defense, is something new for the university.

“I’ve never been involved with anything like that before,” Berkowitz said. “This team came together as a joint vision between the team leadership and our (Department of Defense) funders and it’s pretty unusual across the country to see such a public-private-government partnership.”

In fact, the university hopes this opens the door to continued partnership with private pharma in the longer term, through identifying and developing therapeutics candidates that have dual-purposing potential, Berkowitz said. Berkowitz is co-primary investigator of the project, with Ken Bayles, professor of pathology and microbiology at UNMC.

Bayles said if private pharmaceutical companies are leaving a gap, the University of Nebraska is eager to step in.

“We’ve pitched this concept to develop a virtual pharmaceutical company, a drug development pipeline that would coordinate the activities of all the expertise we have across all of our campuses and develop capabilities to move molecules forward for drug development,” he said.

Handfuls of NU's top scientists will work on medicinal chemistry, metabolomics and bioinformatics in order to move potential drug candidates toward clinical trials. "We'll be coordinating all of these aspects like a pharmaceutical company does," Bayles said. “If we do it right, this pipeline concept is an opportunity to build the economy in Nebraska, build the pharmaceutical industry in Nebraska.”

Berkowitz said the new multi-pronged, multi-campus team is complex, but, "it's working pretty well."

“We are extremely proud to be affiliated with this research and the impact it can have for the Department of Defense, Defense Health Agency and other agencies as well,” Lt. Gen. Hinson said.

Consultants from pharmaceutical industry will advise Nebraska scientists on the drug development effort.

Collaborators include the following University of Nebraska scientists, who bring key expertise to the project to establish a drug development pipeline that could speed the process of developing new drugs at the Armed Forces Radiobiology Research Institute to counteract the effects of radiation exposure:
• Samuel Cohen, UNMC, toxicology. • Patrick Dussault, UNL, synthetic chemistry. • Babu Guda, UNMC, bioinformatics. • Tomas Helikar, UNL, computational systems biology. • DJ Murry, UNMC, pharmacokinetics and pharmacogenetics. • Rebecca Oberley-Deegan, UNMC, radiation therapeutics. • Robert Powers, UNL, metabolomics.

Additionally, multiple University of Nebraska alums, all doctoral scientists, with current or former experience in private pharma, also are involved. This experienced consultant team includes Eugene Cordes of Philadelphia (honorary degree, UNL, 2009), Norton Peet, Holland, Mich. (Ph.D., UNL, chemistry, 1970), Kevin Woller, Antioch, Ill. (Ph.D., UNL, chemistry, 1996), Chad Briscoe, Overland Park, Kan. (Ph.D., UNL, chemistry, 2009), Ryan Hartung, Tuscon, Ariz. (B.S., UNL, chemistry, 2000).

“They are appreciative of the opportunity to give back to their home institution,” said Berkowitz. “They really like the idea of the Lincoln and Omaha campuses collaborating. They really like working for the DoD. There is a patriotic aspect of helping the country and protecting our troops using the tools of biomedical science.

“That’s something that has made this project special for all of us.”

https://news.unl.edu/newsrooms/today/article/nebraska-leads-11m-study-to-develop-radiation-exposure-drugs/

Return to top

Homeland Preparedness News (Washington, D.C.)

**Smiths Detection Named Developer of DOD’s Next Chemical Agent Detector**

By Chris Galford

Jan. 16, 2019

The U.S. Department of Defense (DOD) is pushing forward on new Aerosol and Vapor Chemical Agent Detector (AVCAD) solutions to track chemicals on a smaller scale, and to this end, has selected Smiths Detection (SDI) as designer and engineer.

The company’s contract will put them in cooperation with the Joint Program Executive Office for Chemical, Biological, Radiological, and Nuclear Defense. They will create a miniaturized device that can detect, identify, report and alarm those under threat of dangerous vapors and aerosols. DOD desires it to have wireless remote alarm capability and be both mountable and portable, to maximize its use for military personnel.

“Smiths Detection has partnered with the Department of Defense to provide more than ninety-one thousand Joint Chemical Agent Detector (JCAD) units over the past fourteen years, making the program one of the most effective chemical warfare protection solutions in history,” SDI President Shan Hood said.

For the project, SDI will also work with subcontractor 908 Devices Inc., to acquire the use of their High-Pressure Mass Spectrometry (HPMS) for the AVCAD. Mass spectrometry measures masses within samples, but HPMS allows that process to be miniaturized, eliminating a traditional need for large, cumbersome devices that limit the uses of the process.

SDI’s facility in Edgewood, Md., will handle manufacturing.


Return to top
US ARMS CONTROL

The Hill (Washington, D.C.)

**Kremlin Says Russia Is Ready to Work with US to Save Nuclear Arms Treaty**

By Tal Axelrod

Jan. 16, 2019

Russian Foreign Minister Sergey Lavrov on Wednesday said the Kremlin is willing to work to salvage the Intermediate-Range Nuclear Forces (INF) Treaty, a nuclear deal signed between Washington and Moscow during the Cold War.

Lavrov said that, during talks in Geneva earlier this week, he offered to allow U.S. experts to inspect a missile that the White House says violates the deal, but that the offer was declined, according to The Associated Press.

The U.S. negotiators instead insisted that the missile be destroyed.

President Trump said in October that the U.S. would withdraw from the landmark pact after his administration accused Russia of violating the deal.

Russia’s “decision to violate the INF Treaty and other commitments all clearly indicate that Russia has rebuffed repeated U.S. efforts to reduce the salience, role, and number of nuclear weapons,” the administration wrote in a nuclear strategy document last year.

The pact bans all land-based missiles with ranges of 310 to 3,420 miles and includes missiles carrying both nuclear and conventional warheads. The original ban between Moscow and Washington resulted in 2,692 missiles being destroyed.

Russia claims the missile’s range and dimensions put the missile outside the scope of the INF, but U.S. Undersecretary of State Andrea Thompson maintained in a statement Tuesday that “Russia continues to be in material breach of the treaty.”


Return to top

VOA (Washington, D.C.)

**Russia, US: No Progress in Talks Over 1987 Nuclear Arms Treaty**

By VOA News

Jan. 15, 2019

Russia and the United States said Tuesday there was no progress in talks over Washington’s intention to withdraw from a 1987 nuclear arms treaty because it says Moscow is violating its terms.

"On the whole, we are forced to state that there is no progress. The U.S. position is frozen in its uncompromising and peremptory demands," state news agency Tass quoted Russian Deputy Foreign Minister Sergei Ryabkov as saying after talks with U.S. Under Secretary of State Andrea Thompson in Geneva.
The U.S. side described the meeting as "disappointing."

The three-decade-old Intermediate-Range Nuclear Forces Treaty bans production, testing and deployment of land-based cruise and ballistic missiles with a range of 500 to 5,500 kilometers. President Donald Trump said the U.S. would abandon the pact on Feb. 2 because of Russian violations.

Ryabkov contended that "responsibility for (the possible demise of the treaty) fully and completely rests with the American side." He said the two sides failed to agree on anything and that Washington did not appear to be willing to negotiate further.

The U.S. has demanded that Russia dismantle missiles that Washington claims violate the treaty. Ryabkov said Russia proposed holding more negotiations but got no answer from the U.S.

"We are ready for dialogue on the basis of equality, mutual respect, (and) without putting forward ultimatums," Ryabkov said.

Ryabkov said Russia would brief European diplomats Friday on the status of the talks.

Russian President Vladimir Putin said last month that collapse of the treaty would threaten a new arms race. Putin suggested that he was open to other countries joining the INF treaty or to starting talks on a new agreement.


The Hill (Washington, D.C.)

**Iran Moving Toward Enriching Nuclear Fuel, Top Official Says**

By Michael Burke

Jan. 13, 2019

Iran's nuclear chief reportedly said Sunday that Tehran has launched “preliminary activities for designing” uranium fuel with a purity of 20 percent, a move that would be at odds with the 2015 nuclear deal.

“Preliminary activities for designing modern 20 percent [enriched uranium] fuel have begun,” Ali Akbar Salehi said in remarks covered by state television, according to multiple reports.

The nuclear deal that Iran reached in 2015 with world powers prevented Tehran from enriching uranium above 3.67 percent. Iran was reaching 20 percent before the deal.

President Trump has already pulled the U.S. out of the deal, which lifted sanctions on Iran in exchange for limits on its nuclear program.

Reuters reported that Iran is permitted to produce nuclear fuel under certain conditions that must be approved by a working group convened by signatories of the deal, also known as the Joint Comprehensive Plan of Action.

“We have made such progress in nuclear science and industry that, instead of reverse-engineering and the use of designs by others, we can design new fuel ourselves,” Salehi was quoted telling state television, according to the news service.

Salehi also said that the product Iran is beginning to develop “is different from the previous 20 percent fuel.”

[Return to top](#)
Whence Korean Denuclearization?
By Andray Abrahamian
Jan. 14, 2019

North Korea's state-owned news agency ran a wire story with tremendous significance just before Christmas, making clear that unilateral denuclearization is not going to happen. As part of a detailed explanation of Pyongyang's position, it said: “When we refer to the denuclearization of the Korean peninsula, it, therefore, means removing all elements of nuclear threats from the areas of both the north and the south of Korea and also from surrounding areas from where the Korean peninsula is targeted. This should be clearly understood.” The text also states that “the denuclearization of the Korean peninsula means ‘completely removing the nuclear threats of the U.S. to the DPRK.’”

Pyongyang has long held that their nuclear weapons are a necessary deterrent and has made similar statements in the past, but not so clearly, nor with such a detailed explanation, nor at such a crucial time. Why did they choose to do so at the very end of 2018? There is a degree of unsatisfactory speculation that must take place to try to answer such a question, but we can see a few key elements of the negotiating procedure.

The North Koreans have made it clear they want to deal with President Trump himself, probably correctly assessing that he is more likely to make concessions or take significant risks than are his subordinates. Moreover, working-level negotiations have moved slowly over the past several months.

The DPRK statement, released in a semi-public way on the newswire, might have been an attempt to get the issue clearly and squarely on the president's desk. Perhaps the North Koreans don't believe Secretary of State Mike Pompeo is relaying messages to Trump. Or perhaps the recent retirement of the CIA's Andrew Kim, who has liaised with the North Koreans alongside and for Pompeo, worried Pyongyang. Stephen Biegun, the new US special representative for North Korea, is an unknown quantity to them. Pyongyang probably didn't want to resume and rehash this year's logjam with Biegun in the new year.

This shift in communication strategy fits the North Korean political calendar. The New Year Joint Editorial frames the Korean Worker's Party's positions for the year and all adult North Koreans study the adjustments in the party line for several weeks in January. This includes North Koreans who interface with the outside world: in 2019 they will present to their foreign interlocutors a specific set of demands based on this clearer definition of “denuclearization.”

This leaves President Trump in a bit of a bind. He has to decide if he wants to proceed with the peace and denuclearization process as North Korea has defined it. He could choose a couple different paths.

First, Trump appears to have very few deeply held beliefs about the international order, other than that the US has generally been taken advantage of on trade and multilateral defense. He certainly
doesn’t care much for alliances. One could imagine him saying, "that’s fine, we could remove our nuclear umbrella from South Korea” once we move toward denuclearization of the north. This would face tremendous pushback from the policy and military communities in the US as well as from allies in Asia, however. It would be the sort of pronouncement that would leave him isolated from much of his administration, Congress, and the pundit community that comments on TV; it would be hard to sustain this position.

More likely, he could say, “fine, let’s talk about a freeze on your program and worry about denuclearization later.” This seems more plausible for several reasons.

First, his core constituency doesn’t really care about denuclearization. His base wants to see Trump keep winning and if he tells them this is a win, they will likely accept it and move on. He has shown he is rhetorically able to slip out of nooses that other presidents would have choked on. He could conceivably pivot toward a freeze and cap of the North Korean nuclear program as an attainable goal and let the experts – who again largely don’t matter to his base – fight about whether this is good enough.

In that regard, Trump may well have been aided by a shift in the professional North Korea-watching community. Since roughly the fall of 2017, when war rhetoric and tensions were escalating, an increasing number of commentaries, events, and lectures with titles along the lines of “living with a nuclear North Korea” began to appear. There are now clearly more voices in the analyst community willing to say that the United States can tolerate and deter a nuclear North Korea. Such an opinion was incredibly scarce in 2016.

This is a situation that Trump helped foster. His administration helped raise the prospect of conflict that really did highlight the absurdity of war on the Korean Peninsula. The administration was essentially saying “we are willing to risk a nuclear war to prevent a country from being able to wage nuclear war.” This focused a lot of minds and helped clarify the fact that deterrence remains viable. Whether that means seeking to cooperate or continuing to pressure and isolate North Korea remains up for debate.

In defining that debate, if Trump decides he wants to try to change the US-DPRK relationship, he can point to the text of the Singapore Declaration that he and Kim Jong Un signed at their June 12 summit. While the declaration was much pilloried by observers as a “nothingburger,” it did promise to “establish new US–DPRK relations in accordance with the desire of the peoples of the two countries” and “to build a lasting and stable peace regime on the Korean Peninsula.” Those clauses come before a promise by both sides “to work toward complete denuclearization of the Korean Peninsula.”

President Trump could conceivably articulate a position in which a freeze of the North Korean program is a realistic goal that takes place alongside improved relations between the two countries, putting the issues of the DPRK’s stockpile and the US nuclear umbrella in Asia off for a later date.

This formula would be unsatisfactory to many people, but Trump has shown a willingness to upset traditional stakeholders. Besides, this is North Korea policy. Past attempts at pressure and engagement have been unsatisfactory to one group or another. The status quo is basically unsatisfactory to many, particularly in South Korea. Satisfying everyone will be impossible. Who Trump decides to upset will define how the next round of negotiations with the DPRK goes.

Andray Abrahamian is the 2018-19 Koret Fellow at APARC, Stanford University. He is an adjunct fellow at Pacific Forum and Griffith Asia Institute, an honorary fellow at Macquarie University, and a member of the US National Committee on North Korea. His book, North Korea and Myanmar: Divergent Paths, was published by McFarland in 2018.

https://www.pacforum.org/analysis/pacnet-5-whence-korean-denuclearization
Russia’s Hypersonic Nuke Is a Warning to America

By David Axe

Jan. 15, 2019

Russian president Vladimir Putin is right. The Kremlin’s new, nuclear-armed Avangard hypersonic glide vehicle can defeat any U.S. defense.

The real danger, however, is that some senior U.S. officials seem to believe American defenses such as the U.S. Navy's SM-3 and the Army's Ground-Based Midcourse Defense missile-interceptor can stop a weapon such as Avangard.

Bad advice could encourage a reckless U.S. president to pursue a risky foreign policy while wrongly taking comfort that the Pentagon's missile-defense systems protect the United States from nuclear retaliation.

That’s the latest warning from Ted Postol, a scientist and nuclear-weapons expert at the Massachusetts Institute of Technology. "Statements made by Vladimir Putin clearly and unambiguously indicate that he understands that U.S. missile defenses currently have no capabilities to deal with existing Russian ballistic missiles, yet alone something like a hypersonic-like vehicle."

"What concerns Putin is that U.S. political and military leadership is so out of touch and so politicized with regard to the missile defense issue that a future president might actually think that they could get away with striking Russian nuclear forces and then using missile defenses to defend against a straggling Russian counterattack," Postol explained.

Avangard launches atop a rocket before separating and gliding toward its target at an altitude just below the upper limit of the atmosphere and a velocity 20 times the speed of sound or faster.

No existing U.S. missile defense system can target a vehicle moving that fast at such a relatively low altitude for a strategic weapon. "We don’t have any defense that could deny the employment of such a weapon against us," U.S. Air Force general John Hyten, the head of U.S. Strategic Command, said in March 2018.

But not all American leaders appreciate this fact, Postol said. "For example, [retired] general James Cartwright [the vice chairman of the Joint Chiefs of Staff from 2007 to 2011] testified before the Senate Armed Services Committee that it was his judgment that the GMD system could under some circumstances have a greater than 90-percent intercept rate against a small number of ICBMs."

"When pressed by [then]-senator Birch Bayh of Indiana about the strength of his conclusion, he stated that he would advise a U.S. president to this effect in a crisis," Postol continued.

"Without going into the details at this moment, I believe his reasoning was based on a total misunderstanding of the testing statistics associated with that system. The problem is that one can imagine circumstances where somebody with Cartwright’s extraordinarily limited understanding but appearance of knowledge could be seen as an expert by a president during a crisis.

"Although such a circumstance is extremely improbable, when one is talking about the potential of a large-scale nuclear exchange occurring due to such impressive levels of advisory ignorance, anyone who is worried about these problems would take Cartwright's ignorance very seriously.
“So the real problem from Putin’s point of view is the potential that someone in American leadership could take an extraordinarily ill-advised decision under some kind of crisis situation to try to destroy Russian nuclear strike forces with a preemptive strike and then try to deal with the ragged retaliation using missile defenses,” Postol went on.

“However ludicrous this concern may appear, it is not simply the fantasy of an ill-informed Russian leader. In fact, it is a reasonable concern of a sophisticated thinking well-informed Russian leader who sees potential adversaries with remarkably ill-informed political and military leadership.

“So it is very clear that Putin’s strategy is to develop nuclear strike systems that even someone who is completely ignorant would understand cannot be addressed with missile defenses,” Postol warned.

Putin’s own words seem to back up Postol’s assertion. "I hope our newest systems will make think those who got accustomed to militarist and aggressive rhetoric," Putin commented while announcing progress on Avangard.

"The point of the weapon is to make it clear, even to somebody who is totally ignorant, that missile defenses would have no capability to deal with the weapon," Postol said. "This is the strategy behind building and deploying ballistic missile warheads that maneuver above the atmosphere to disrupt GMD and SM-3 tracking and homing systems, and it is also the strategy behind the hypersonic ... vehicle."

"Putin understands that U.S. missile defense systems basically have little or no chance of intercepting anything," Postol concluded. "But he is not so worried about the systems as he is the numbskulls who make decisions about when and how to use the systems."

David Axe serves as the new Defense Editor of the National Interest. He is the author of the graphic novels War Fix, War Is Boring and Machete Squad.

https://nationalinterest.org/blog/buzz/russias-hypersonic-nuke-warning-america-41597

Return to top
War shows instead that any U.S./North Korea deterrence relationship will be highly prone to a catastrophic failure that leads to a nuclear exchange.

So, while a deterrence option that effectively eliminated the risk of a nuclear attack would be the right way to deal with the North Korean nuclear threat, that option does not exist. The options on the table are: i) eliminating that threat by means of a preventive war now against a relatively weak North Korea; or ii) imperfect deterrence that necessarily entails a substantial risk of a devastating nuclear exchange with a far more powerful North Korea in the future. In the absence of a highly improbable diplomatic breakthrough that leads to real and genuine denuclearization, preventive war now is the prudent response to the North Korean nuclear threat.

How to estimate the risk of deterrence roulette

The risk of a catastrophic deterrence failure that leads to a nuclear attack arises from the very logic of deterrence itself. If two hostile countries are in a deterrence relationship, then each is committed to retaliating if it believes that the other is attacking or is about to attack. While this commitment does indeed limit the possibility that one country deliberately decides to launch an unprovoked nuclear attack on the other (by the standard logic of mutually assured destruction), it simultaneously creates the possibility of nuclear war by mistake. If an event such as political/military crisis, a military misunderstanding, or an early warning system failure leads to one country mistakenly believing that it is or is about to be under attack, that country may in turn mistakenly launch what it thinks is a retaliatory strike (as the logic of deterrence demands). If the probability of nuclear war by mistake is high, then deterrence cannot eliminate the risk of a nuclear attack.

How can we estimate the risk of a nuclear war by mistake? We need to base our estimate of what might happen in the future on what could have happened during the Cold War. The simple, obvious, and (as it turns out) wrong way to proceed is to then take what did happen to us during the Cold War as a good representation of what could have happened. Going down this path, we find that there were, in fact, no U.S./Soviet nuclear wars ("we tolerated Soviet nuclear weapons during the Cold War"). We then infer that the risk of a deterrence failure is low and so happily conclude that, as Scott Sagan put it in Foreign Affairs, "the same approach that prevented nuclear catastrophe during the Cold War can deter Pyongyang."

The flaw in this line of reasoning is thinking that what did happen to us captures the true range of possible outcomes. When we look back to what happened to us during the Cold War, the only things that could have happened to us are things that are consistent with us ending up where we are now (even though we could have ended up in a very different situation). It follows that our particular path through history may provide a very biased view of what could have happened in general (in statistics this phenomenon is referred to as observer selection bias). Consequently, what did happen to us may prove to be a very poor guide to what might happen in the future.

To make this pointless abstract, suppose that you have played some large number of rounds of Russian roulette with a gun that has an unknown chance of killing you in each round. Based upon your history, you wish to estimate the risk of playing one more round. If you approach this problem the way the foreign policy establishment approaches North Korea, you will: i) count up the number of times that you have killed yourself in previous rounds; ii) find that you did not kill yourself even once; and iii) happily conclude that Russian roulette is perfectly safe.

But that would be wrong. Since you are alive to do the counting, it must be the case that your path through previous rounds is consistent with your being alive now. The only path that meets this requirement is one in which you did not kill yourself. Therefore, it is an inherent feature of your current situation that you did not kill yourself in the past. So, looking back from your current
situation, you will necessarily find that you did not kill yourself—no matter how high the risk of killing yourself is in a given round. Since you observe the same history of non-death for any true probability of killing yourself, the fact that you are alive now tells you absolutely nothing about the risk of playing another round.

So, if estimating the risk of a catastrophic deterrence failure is like estimating the risk of death in a game of Russian roulette, then estimating the risk of a deterrence failure by counting up the number of U.S./Soviet nuclear exchanges is the wrong approach to take. Is it?

An Office of Technology Assessment report on the consequences of a U.S./Soviet nuclear war found that a full U.S./Soviet nuclear exchange would have destroyed every major city in the U.S., killed in excess of 100 million people, and completely demolished the economy. So, if such an exchange had occurred, many of the people now involved in the “what to do about North Korea” debate would be dead (or would never have existed), the U.S. would not exist in its present form, and, whatever people in this alternative post-apocalyptic U.S. of 2019 were worried about, it would not be “just how effectively can the U.S. deter North Korea?”. In short, there is no path from 1960 to anything close to our present situation that includes even a single U.S./Soviet nuclear exchange.

Consequently, starting from our present situation, there are—by definition—no U.S./Soviet nuclear exchanges in our history. It is, therefore, no surprise that we don’t find one when we look. It follows that the lack of U.S./Soviet nuclear exchanges during the Cold War tells us nothing at all about the risk of catastrophic deterrence failure. We cannot tell (from that information) if we made it through the Cold War because the risk of a deterrence failure was low or if we made it through because the risk was high and we were lucky.

To figure out how to correctly estimate the risk of a deterrence failure, we need to find some way of dealing with observer selection bias.

To do so, we can think of the Cold War as consisting of a series of tranquil rounds and crisis rounds. A tranquil round is one with no risk of a nuclear war; a crisis round consists of an event that could lead to a nuclear war and ends in either a nuclear war near miss or a nuclear war full stop. So, the risk of a nuclear war by mistake increases as the probability of a crisis increases.

Our Cold War experience consists of a specific path through history consisting of tranquil rounds and crisis rounds. The set of all possible paths through the Cold War include those with a crisis that ends in nuclear war. Of course, given that we are in our present situation, we know that we did not take such a path.

But—crucially—our path could include nuclear war near misses because a near miss would not have destroyed the U.S. as we know it today. Since a nuclear war near miss indicates a crisis that could have led to nuclear war if circumstances had been ever so slightly different, we can estimate the probability of crisis by counting up (and analyzing) these near-miss events.

So, we can correctly gauge the risk of a nuclear war by mistake by examining our experience with deterrence during the Cold War. We have to look for the right things. And the right things to look for are nuclear war near misses rather than nuclear exchanges.

The risks of deterrence roulette with North Korea

There were a terrifyingly high number of nuclear war near misses during the Cold War. It follows that deterrence roulette is extremely risky and that (as uncomfortable as this is to hear) good luck played a crucial role in getting us through the Cold War without a nuclear exchange.

Near misses arose from political/military crises such as the Cuban Missile Crisis, military misunderstandings such as the Able Archer exercise of 1983, and early warning system failures.
Examining nuclear war near miss events suggests that a U.S./North Korean deterrence relationship will be far more prone to catastrophic failure than was the U.S./Soviet deterrence relationship.

Two episodes, in particular, illustrate just how fragile any U.S./North Korean deterrence relationship will be.

On 9 November 1979, a software simulation of a full Soviet nuclear attack was somehow (it is still not clear how) transferred onto the operational warning system displays at NORAD, SAC, and the National Military Command Center. All three commands reacted as if the Soviets had genuinely launched an attack. National Security Advisor Brzezinski was—literally—a minute away from waking President Carter to determine the U.S. response when he was informed that it was a false alarm.

The military was able to determine that this alarm was false because they had (barely) enough time to check the raw satellite data to see if it was consistent with the attack reports on their displays. They had this time because Soviet launch sites are a long way from the U.S.

North Korea is a small country bordered by a U.S. ally on one side and oceans open to the U.S. Navy on two others. Any U.S. attack will begin with submarine-launched missiles and strikes by stealth aircraft, and North Korean command and control systems will surely be among the first targets. Consequently, staff operating the North Korean early warning system will have very little time indeed to sort out true alarms from false alarms before having to decide what to do.

Systematically analyzing the publicly available data on early warning system performance and false attack alarm rates, Barrett, Baum, and Hostetler put the probability of a U.S./Soviet nuclear war by mistake during the Cold War at about 2% per year (mean estimate)—or a 40% chance over 25 years. Given that North Korean early warning system staff will be operating under far greater time pressure than the already extreme time pressure faced by U.S. and Soviet staffs, it would be rash to assume that the chance of a U.S./North Korea nuclear war by mistake is lower than the chance of a U.S./Soviet nuclear exchange during the Cold War.

In addition to time, accurately vetting attack alarms requires that early warning system officers exercise (in the words of a recent Chatham House report) independent and “prudent judgment, which might involve disobeying previous orders.” The Stanislav Petrov incident illustrates just how important judgment can be.

On 26 September 1983, Stanislav Petrov was the duty officer at the Soviet early warning system command. Soviet satellites detected the launch of a U.S. first strike, and the reliability of the report was rated as “Highest.” In this situation, Petrov’s standing orders required him to report the alert up the chain of command. In 1983, the Soviet leadership was extremely worried about the possibility of a U.S. first strike. It is therefore likely that, if Petrov had reported the alarm (of the highest reliability) to his superiors, the Soviets would have followed their doctrine and retaliated. Petrov’s gut instinct was telling him that the alarm was false. Fortunately for the world, Petrov ignored his orders and went with his gut instinct.

To the best of my knowledge, there is no publicly available study on how early warning system officers deal with the uncertain, complex, and stressful situation of a nuclear attack alarm. However, studies of human error in airplane crashes (also uncertain, complex, and stressful events) show that people from uncertainty-averse cultures tend to deal with complex and stressful situations by following rules and avoiding independent judgments. Consequently, pilots from such cultures are more likely to crash planes.

South Korean culture is among the most uncertainty-averse in the world. Unsurprisingly, the South Korean airline KAL had a disastrous safety record until the airline explicitly set out to transform its operating culture. It is safe to assume that North Korean military culture will be even more...
uncertainty-averse than South Korean culture, and it seems unlikely that Kim Jong-Un will actively seek to install an ethos of independent judgment and initiative in the North Korean officer corps. Consequently, the North Korean officer corps will be spectacularly ill-suited to exercise the prudent judgment that avoiding a nuclear war by mistake requires.

To recap: any U.S./North Korea deterrence relationship will inevitably be subject to political/military crises and early warning system failures that create the risk of a nuclear war by mistake. Plausible estimates put the risk of a U.S./Soviet nuclear war arising from an early warning system failure at 2% per year and examining the factors that drive this risk to suggest that the risk of accidental nuclear war with North Korea could be higher still.

So, deterrence will work against North Korea. It just won’t work very well.

Starting From Here

Kim Jong-Un vowed in his 2018 New Year’s address to “mass-produce nuclear warheads and ballistic missiles,” and this is one vow that he is keeping. If North Korea continues along its present path, it will ultimately be in a position to launch a nuclear strike that will kill tens of millions of people in the U.S., South Korea, and Japan. We are therefore starting from a poor position. Our goal has to be to find a way of dealing with the North Korean nuclear threat that minimizes the expected number of civilian deaths in the U.S., South Korea, and Japan.

The U.S. has three options: i) convincing North Korea to denuclearize via diplomacy; ii) limiting the probability of an attack with deterrence; and iii) eliminating the risk of an attack (and the North Korean regime) by means of preventive war.

Diplomacy is, of course, the ideal solution as it solves the problem in a way that does not involve any civilian deaths (and substantially advances North Korean economic development to boot). However, it is apparent that North Korean participation in the diplomatic process kicked-off by the Singapore Summit is just a charade to reduce the chance of a war (which was a definite possibility pre-Singapore) while North Korea strengthens its nuclear arsenal. The real options on the table are imperfect deterrence and preventive war.

The U.S. could accept North Korea as a nuclear state and limit the risk of a nuclear war with deterrence. The deterrence option, therefore, enables the U.S. to avoid a preventive war now with a relatively weak North Korea, but only at the cost of a substantial risk of a nuclear war by mistake with a far more powerful North Korea in the future.

The only way that the U.S. can eliminate this risk of a nuclear war with a vastly more powerful North Korea in the future is to eliminate that threat now. Since eliminating North Korea’s nuclear threat will require eradicating the North Korean regime and destroying the North Korean military, this war could lead to hundreds of thousands of American, South Korean, and Japanese civilian casualties.

So, deterrence roulette or preventive war? A nuclear war with North Korea in the future (if it happens) will kill a far, far greater number of American, South Korean, and Japanese civilians than would a preventive war now. So, to conclude that deterrence with a risk of war later is preferable to a preventive war now, one would have to be very certain that the probability of a nuclear war by mistake in the future is very low. It is, of course, easy to reach this conclusion if one estimates the risk of a catastrophic deterrence failure the wrong way. However, if one estimates this risk correctly by examining the evidence on nuclear war near misses, I at least do not see how it is possible to be very certain that the probability of a nuclear war by mistake is very low.

North Korea is commonly referred to as “the land of no good options.” This expression does not mean that there are no good options. After all, an option is neither good nor bad in any absolute
sense, but only relative to other options. And, logically, it is impossible for every option to be worse than every other option. Instead, this expression is best understood as a lament that we are starting from here with the options we have rather than starting from somewhere else with an entirely different set of options. I wish that we were starting from somewhere else too. But, due to the utter fecklessness of the Obama administration, we are where we are.

And starting from here, a preventive war now is a far better option than recklessly betting the lives of millions of Americans, South Koreans, and Japanese on deterrence roulette.

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https://www.realcleardefense.com/articles/2019/01/14/north_korea_deterrence_roulette_or_preventive_war_114103.html

Return to top
ABOUT THE USAF CSDS

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

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

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

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

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