



UNITED STATES AIR FORCE
CENTER FOR STRATEGIC
DETERRENCE STUDIES

NEWS AND ANALYSIS

Issue 1400
17 January 2020

Feature Report

“Energy and Water Development Appropriations: Nuclear Weapon Activities”. Published by Congressional Research Service; Updated Jan. 6, 2020

<https://fas.org/sgp/crs/nuke/R44442.pdf>

The annual Energy and Water Development appropriations bill funds civil works projects of the Army Corps of Engineers, the Department of the Interior’s Bureau of Reclamation, the Department of Energy (DOE), and several independent agencies.

The DOE budget includes funding for the National Nuclear Security Administration (NNSA), a separately organized agency within DOE. NNSA operates three programs: Defense Nuclear Nonproliferation, which secures nuclear materials worldwide, conducts research and development (R&D) into nonproliferation and verification, and operates the Nuclear Counterterrorism and Incident Response Program; Naval Reactors, which “is responsible for all U.S. Navy nuclear propulsion work”; and Weapons Activities.

The last is the subject of this report. The Weapons Activities account supports programs that maintain U.S. nuclear missile warheads and gravity bombs and the infrastructure programs that support that mission. Specifically, according to DOE’s budget documentation, these programs “support the maintenance and refurbishment of nuclear weapons to continue sustained confidence in their safety, reliability, and performance; continued investment in scientific, engineering, and manufacturing capabilities to enable certification of the enduring nuclear weapons stockpile; and manufacture of nuclear weapons components.”

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NUCLEAR WEAPONS AND DETERRENCE

Air Force Magazine (Arlington, Va.)

Experts Urge US to Develop China Deterrence Strategy

By Rachel S. Cohen

Jan. 15, 2020

The US government needs to take a closer look at what could deter a war with China as the Pentagon shifts its focus to security in the Indo-Pacific region and competition between world powers, defense experts told House lawmakers Jan. 15.

Modern deterrence theory is largely modeled on ideas honed in the Cold War, and are based on the threat a nuclear stockpile poses. But with China growing dependent on cyber and space capabilities like the US, and with a different set of motivations than Russia in play, some say America can't take a one-size-fits-all approach to discouraging aggression.

Deterring China requires input from across the federal government, with creative thinking and an eye on how China's Belt and Road Initiative for global development could affect security, said Michèle Flournoy, a co-founder and managing partner at WestExec Advisors who served as under secretary of defense for policy from 2009 to 2012.

She argues the Defense Department's top priority in great power competition should be drawing clear lines with Beijing to avoid dangerous missteps.

"While I believe neither the United States nor China is likely to deliberately start a war given the dire costs involved, we could nevertheless stumble into conflict if the Chinese leadership were to miscalculate the ability or willingness of the United States and our allies to respond to provocations or outright aggression," Flournoy said in written testimony to the House Armed Services Committee.

"The risk of miscalculation is greatest in the next 10 years—when the United States has telegraphed its vision for the future force but has yet to procure and deploy all of the technologies and systems necessary to fully translate this vision into fielded capabilities."

Michael McDevitt, a senior fellow at the Center for Naval Analyses and a retired rear admiral, said the Pentagon's China strategy needs a firmer backbone. He pointed to the Defense Department's 2019 Indo-Pacific Strategy Report, suggesting the president's signature and congressional backing would give it more clout as a path forward.

That outlook could be one piece of a whole-of-government approach to studying and countering China. Deterrence should also consider issues like Hong Kong independence, a stronger Japan, a unified Korean Peninsula, and the economic strength of world powers, Rep. Michael Waltz (R-Fla.) said during the hearing.

Unlike US-Russia relations, nuclear weapons would play a smaller role in the balance of power between the US and China, whose arsenal is dwarfed by American assets, Flournoy said. Nuclear weapons can stay in the background so the specter of nuclear war still looms, but the US should rein them in via arms control agreements and consider forms of conventional deterrence that can ward off bad actions in the South China Sea or toward America's regional allies. The Pentagon can better balance its money between nuclear modernization and development of other options, she said.

It can also find new ways to measure how effectively the US is holding China at bay.

“Numerical targets like 355-ship Navy, X number of Air Force squadrons, those are the metrics of the past,” Flournoy said. “If we hold to those, we will get this wrong. ... The right things that we should be measuring are the time and scale of outcomes we can achieve that contribute to deterrence. Can we hold the Chinese fleet at risk, at scale, in a 72-hour period?”

That would force the military to rethink its roles and tools, she said, like flying Navy munitions on Air Force aircraft, or shifting Army or Marine Corps artillery missions to pose new problems for adversaries.

Flournoy suggested the special operations community could take on a greater role in gray-zone, irregular warfare, to hone skills that have been a lower priority for the past few decades. Cyber deterrence is also key: “Establishing norms of behavior in cyberspace would bolster deterrence by setting collective expectations and enabling collective action when red lines are crossed,” she wrote.

Deterrence theory will also have to consider the use of developing technologies like hypersonic weapons.

McDevitt said the Pentagon’s pursuit of strategic hypersonic missiles can be puzzling. Those weapons make sense at a tactical level, he said, but the military doesn’t need any more intercontinental ballistic missiles, which already travel five times faster than the speed of sound.

“If we’re going to focus on hypersonics, we ought to focus on what is tactically usable,” he said.

Andrew Hunter, director of the Defense-Industrial Initiatives Group at the Center for Strategic and International Studies, said that while hypersonic weapons may not be critical to a fight, they would open new options and make adversaries think twice about how fast and where the US could strike.

McDevitt added that DOD’s combat options can include growing the number of submarines in the region to as many as 15, and deploying land-based, conventionally armed ballistic and cruise missiles to the western Pacific.

“DOD should be encouraged to make this a priority in order to begin to offset the unchallenged advantage that China Strategic Rocket Force currently enjoys,” he said.

Experts and lawmakers also stressed the importance of a command and control system that can pull all the assets together and understand the state of play.

Command and control is one of the Pentagon’s biggest problems going forward because every asset relies on that network performing well, HASC Chairman Rep. Adam Smith (D-Wash.) said. Such a network has to be cybersecure and could rely on artificial intelligence and quick upgrades to stay relevant. The Air Force is leading a push toward what is now dubbed joint, all-domain C2 to pursue that vision.

“The services are asking to shift money to these efforts, whether it’s the Air Force moving \$9 billion towards this, whether it’s requesting your help for spiral development and experimentation,” Flournoy said. “It’s tough because it’s taking money away from legacy programs, but ... we’ve got to move serious money into this area if we’re going to make progress on the time and scale that we need to.”

C2 networks also make good targets, McDevitt said.

“Without their ability to surveil the open ocean, they can’t use their anti-ship ballistic missile. They don’t know where to vector their diesel submarine. They don’t know where to launch their land-

based aircraft, or what direction,” he said of China. “We should not wring our hands and say [facing China is] too hard. All we have to do is make that system not work.”

<https://www.airforcemag.com/experts-urge-us-to-develop-china-deterrence-strategy/>

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National Defense (Arlington, Va.)

Army Pushing Industry to Invest in Hypersonic Manufacturing Capabilities

By Jon Harper

Jan. 10, 2020

Defense contractors need to invest some of their own money to make sure they are ready to produce hypersonic and counter-hypersonic systems in large quantities when the technology matures, Army Secretary Ryan McCarthy said Jan. 10.

Hypersonic missiles — and the means to defend against them — are the Pentagon’s No. 1 research-and-development priority. It has been pumping large sums of money into a variety of efforts.

The Army is teaming with the other services to advance the technology, with the hopes of fielding systems in the early- to mid-2020s.

“We have a joint partnership across the entire Department of Defense between the Navy, Air Force and Missile Defense Agency” for R&D, McCarthy said during remarks at the Brookings Institution in Washington, D.C. “We’re investing billions of dollars across this future years defense plan ... [and] looking at even increasing the profile over the next couple budgets.”

However, missile manufacturers and other suppliers need to do more to boost their manufacturing capability, McCarthy said.

“What we need to see is industry step up,” he said. “They’ve got to come forward and ... first and foremost, invest the time to work with our national lab network to understand how we’ve come forward with these technologies. But they’re going to have to make investments to be able to produce these at scale.”

Hypersonic weapons — which will travel at speeds of Mach 5 or faster — will be challenging for missile defenses because of their quickness and enhanced maneuverability. McCarthy said they are a game-changing capability with offensive and defensive implications for the world’s militaries.

The United States could deploy these systems in the Indo-Pacific region to deter China and more effectively wage war in the event of a conflict, he noted. The Senkaku or Ryukyu Islands or the South China Sea are potential areas where they could be based.

“Because of the extraordinary speed and lethality of that capability, ... from an offensive standpoint it creates dilemmas that would disrupt any [adversary’s] decision cycle,” he said.

Great power competitors China and Russia are developing their own hypersonic missiles. To defend against such weapons, advanced interceptors and other hardware aren’t the only critical tools, McCarthy noted. Robust sensing and command-and-control technologies are also essential.

“Just how fast can you find [the enemy missile] and then cue something to kill it?” he said.

Artificial intelligence will likely play a role in counter-hypersonic systems because the operational timelines will be so short, he said.

“The dilemma is that if you don't have ... artificial intelligence-like capabilities, because of the speed at which the munition can travel you can't find it, sense it or shoot it because it will be there within a couple of minutes,” McCarthy said. “This is an extraordinary capability that a lot of countries are investing enormous national resources against, and it's going to change warfare.”

<https://www.nationaldefensemagazine.org/articles/2020/1/10/army-pushing-industry-to-invest-in-hypersonics-manufacturing-capabilities>

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Arms Control Association (Washington, D.C.)

Congress OKs Trump Nuclear Priorities

By Kingston Reif

January/February 2020

Congress voted in December to continue to fund the Trump administration's plans to expand U.S. nuclear weapons capabilities despite the strong opposition of the Democratic-led House.

Most notably, lawmakers approved the deployment beginning this fiscal year of a small number of low-yield nuclear warheads for submarine-launched ballistic missiles (SLBMs) as proposed in the administration's report of its Nuclear Posture Review (NPR), which was released in February 2018. (See ACT, March 2018.)

The final outcome on the warhead deployment was one of several conclusions that reversed actions taken by the House in 2019 to counter the administration's nuclear weapons policy and spending proposals.

In addition to prohibiting the fielding of the low-yield SLBM warhead, the House versions of the fiscal year 2020 defense authorization, defense appropriations, and energy and water appropriations bills denied funding to begin a study of a low-yield warhead for a new sea-launched cruise missile. The House bills also reduced funding to sustain the megaton-class B83-1 gravity bomb, expand the production of plutonium pits, and build a new fleet of intercontinental ballistic missiles (ICBMs) and associated W87-1 ICBM warheads.

House Armed Services Committee Chairman Adam Smith (D-Wash.) has been sharply critical of the NPR report and maintained that the United States has more nuclear weapons than it needs for its security or can reasonably afford. (See ACT, January/February 2019.)

The White House and Republican-led Senate resisted the House policy and funding provisions, and the final authorization and appropriations bills did not include the House-sought restrictions.

Congress is providing nearly \$30 million, the same as the budget request, to move forward with deployment of the low-yield SLBM warhead. President Donald Trump signed the defense and energy and water appropriations bills into law as part of two larger appropriations packages on Dec. 20. He also signed the defense authorization bill into law on Dec. 20.

The outcome of the SLBM warhead issue was one of several that “were not resolved to the satisfaction of me and the Democratic Party,” Smith said in a late December interview with Defense News.

Sen. Jack Reed (D-R.I.), the ranking member of the Senate Armed Services Committee, also expressed regret that the prohibition on the deployment of the warhead was not included in the final bill.

“I maintain that this is one weapon that will not add to our national security but would only increase the risk of miscalculation with dire consequences,” he said in Senate floor speech on Dec. 17.

Triad Fully Funded

The defense appropriations law approved nearly the entirety of the Trump administration’s proposed budget request for programs to sustain and rebuild nuclear-armed missiles, submarines, and bombers and their supporting infrastructure, including \$2.2 billion to build a fleet of 12 new ballistic missile submarines, \$3 billion to build a fleet of at least 100 new long-range bombers, \$558 million to build a new ICBM system, and \$713 million to replace the existing air-launched cruise missile. (See ACT, March 2019.)

The House had proposed to reduce the budget request of \$571 million for the program to build the new ICBM system, known as the Ground-Based Strategic Deterrent system, by \$109 million. This cut would have prevented the program from moving to the main development phase. (See ACT, September, 2019.)

The energy and water law provided \$12.5 billion for nuclear weapons activities conducted by the National Nuclear Security Administration (NNSA), an increase of \$49 million above the budget request and \$1.4 billion more than last year’s appropriation.

In contrast, the House had proposed \$11.8 billion for weapons activities, a decrease of about \$650 million below the budget request of \$12.4 billion.

The authorization and appropriations laws also require several reports intended to provide Congress with additional information about several key nuclear policy issues and modernization programs. The authorization law requires independent studies on the benefits and risks to the United States of adopting a no-first-use policy, the risks of nuclear terrorism and nuclear war, and the plan to replace the W78 ICBM warhead with the W87-1.

In addition, the energy and water law requires the NNSA to report on the risks to executing the W87-1 program, the estimated cost and impact on the NNSA’s workload of the options under consideration to build a sea-launched cruise missile warhead, and the current status and future plans for the B83-1 gravity bomb.

Overall, Congress provided \$746 billion for national defense programs, an increase of \$8 billion above the revised 2011 Budget Control Act spending cap for fiscal year 2020 agreed by Congress last summer.

Missile Defense Oversight Increased

The final authorization law retained several provisions contained in the House version of the bill designed to restrain the role of missile defense and enhance congressional oversight of it.

The law updates U.S. national missile defense policy to state that the U.S. homeland missile defenses are intended to defend against rogue states and that the United States will rely on nuclear deterrence for near-peer adversary ballistic missile threats such as Russia and China.

The new policy comports with the text of the 2019 Missile Defense Review report, released in January 2019, which limits the purpose of U.S. homeland defenses to defending against limited missile attacks from North Korea and Iran, not Russia and China. (See ACT, January/February 2019.)

But the new policy contradicts the role for these defenses outlined by Trump. In remarks at the rollout of the Missile Defense Review report, Trump stated that the goal of U.S. missile defenses is to

“ensure we can detect and destroy any missile launched against the United States—anywhere, anytime, anyplace.”

The new policy also revises the role for U.S. homeland defenses set in the fiscal year 2017 defense authorization law, which stated that it shall be “the policy of the United States to maintain and improve an effective, robust layered missile defense system capable of defending the territory of the United States and its allies against the developing and increasingly complex ballistic missile threat.” (See ACT, January/February 2017.)

In addition, the authorization law retains a House provision eliminating a requirement established in the fiscal year 2018 law requiring the development of a test bed for missile defense interceptors in space. The 2020 law does not alter the 2018 law’s requirement to pursue development of a space-based missile defense interceptor layer. (See ACT, September 2018.)

The defense appropriations law zeros out the Pentagon’s \$34 million request to begin developing a neutral particle beam, a space-based laser weapon to destroy ICBMs during their boost and midcourse phases of flight, and cuts \$10 million from the \$30 million request to study the development of interceptors in space. (See ACT, April 2019.)

The authorization law also requires an independent study mandated by the House assessing the benefits and costs of U.S. missile defense development on the security of the United States.

The appropriations law provides \$10.5 billion for the Missile Defense Agency, an increase of \$1 billion from the budget request of \$10.4 billion. The increase includes more than \$500 million in unrequested funding to sustain the existing Ground-Based Midcourse Defense system based in Alaska and California and design a new homeland defense interceptor in the wake of the demise of the Redesigned Kill Vehicle program. (See ACT, October 2019.)

The law also funds the administration’s request to test in 2020 the Standard Missile-3-IIA interceptor against an ICBM-class target. The House had proposed to eliminate funding for the test.

<https://www.armscontrol.org/act/2020-01/news/congress-oks-trump-nuclear-priorities>

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US COUNTER-WMD

Global Biodefense (Seattle, Wash.)

Suspending Threats in Mid-Air: Army Laser Beam Capable of Detecting Chem-Bio Warfare Agents

By Global Biodefense

Jan. 14, 2020

Using a single laser beam, Army researchers recently developed a technique capable of detecting and characterizing any type of airborne particles, whether naturally occurring or those harmful and deliberately disseminated.

Scientists from the U.S. Army Combat Capabilities Development Command’s Army Research Laboratory (CCDC ARL) along with collaborators from the University of Queensland, Australia, conducted the modeling and optical simulations of the design technique.

“We developed an advanced analytical technique that is capable of detecting and characterizing any type of airborne particles; naturally occurring (dust, smoke, pollen, ash, etc.) or those harmful and deliberately disseminated such as chemical and biological warfare agents,” said Dr. Yong-le Pan, CCDC ARL researcher. “In this design, a single laser beam is used to capture a single particle and immobilize it — suspended in air.”

Army researchers demonstrate trapped particles in a laser beam .

The approach provides a contactless particle manipulation and allows a rapid and precise physico-chemical characterization. The innovative aspect in this study is the use of two small parabolic mirrors, or reflectors, to shape up a hollow laser beam and create highly efficient trapping forces — instead of using expensive microscope objectives and complex optical setup.

In comparison with current trapping techniques, this method offers several advantages such as low cost, simplicity in design, higher efficiency and improved robustness, Pan said. As the particle is trapped far away from any optical surface, it minimizes instrument contamination and allows integration with other laser-based analytical techniques such as Raman, fluorescence, etc.

“The ultimate goal of this study is aligned with Soldier lethality,” said Dr. Aimable Kalume, CCDC ARL researcher. “By focusing on the Soldier survivability in presence of aerosol particles, especially chemical and biological warfare agents, we proposed a new technique that can help lower false positives, increase precision and minimize human exposure and instrumental contamination.”

The researchers hope to develop an on-line instrument that is able to capture fine airborne particles, rapidly characterize them with high precision and monitor their temporal evolution in various environmental conditions.

“While this invention can have direct application in various areas (biology, chemistry, pharmaceutical, air monitoring and atmospheric sciences), the DOD and Department of Homeland Security are specifically interested in early warning and real time detection and characterization of chemical/biological agents,” Kalume said. “The DOD is also interested in monitoring a wide range of aerosol particles affecting the mission (reduced visibility, communication, Soldier’s exposure to smoke from burn-pits, or to diesel exhaust, etc).”

The proposed approach is based on the interaction with electromagnetic radiation: a single laser beam is used to trap, hold an aerosol particle and provide information of its chemical and physical properties.

“This study aligns well with the essential research area of discovery, by tackling the problem of detecting and characterizing warfare agents from a fundamental physics principle,” Pan said. “After our recent successful demonstration in a laboratory setup, the next steps will focus on engineering and developing this technique into a compact and lightweight instrument that can be deployed on the battlefield.”

<https://globalbiodefense.com/2020/01/14/army-researchers-use-single-laser-beam-to-detect-all-types-of-airborne-particles/>

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Al-Monitor (Washington, D.C.)

Pentagon Considering Reinforcing Missile Defenses after Iranian Strikes

By Jack Detsch

Jan. 15, 2020

The Pentagon is considering sending additional missile defenses and other capabilities to the Middle East to defend American troops in the wake of Iranian ballistic missile strikes in Iraq Jan. 8.

While Iranian ballistic missiles fired at Ain al-Asad air base and the Erbil airport caused no troop casualties among US or coalition forces, Army Secretary Ryan McCarthy said this morning the strikes reinforced Iran's ability to target and kill Americans.

"They're a very capable enemy," McCarthy said on Wednesday. "They have capabilities that can strike and kill Americans."

McCarthy said it would ultimately be up to Defense Secretary Mark Esper, his predecessor in the Army's top civilian role, to decide whether to send reinforcements.

"It could be a variety of enablers, like missile defense and others, so we're looking at that," he said, refusing to provide details on what capabilities the Army could send.

Senior US officials said last week the Pentagon was mulling the deployment of more air defenses after the attacks, which Iran said was in retaliation for an American drone strike that killed Quds Force chief Qasem Soleimani at the Baghdad airport earlier this month.

Since a Dec. 27 Iran-backed attack on an Iraqi base in Kirkuk that killed an American contractor, the Pentagon has deployed 3,500 paratroopers from the 82nd Airborne Division to the region, a company-sized element of Army Rangers and the 173rd Airborne Brigade Combat Team.

The Pentagon has steadily beefed up missile defenses in the Middle East, largely to defend Saudi Arabia, since military tensions with Iran have escalated dating back to last May.

After the United States blamed Iran for cruise missile attacks and drone strikes against a Saudi oil installation last September, the Pentagon deployed three Patriots and a Terminal High Altitude Air Defense battery to bolster the kingdom's defenses.

Iran has a missile arsenal believed to be around 2,000 projectiles, the largest in the region. The Donald Trump administration has repeatedly called for a new nuclear deal that would end that weapons program.

<https://www.al-monitor.com/pulse/originals/2020/01/pentagon-reinforce-missile-defenses-iran-strikes.html>

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US ARMS CONTROL

Space News (Alexandria, Va.)

Study Raises Prospect of Space Conflict If U.S. and Russia Abandon Nuclear Arms Control Treaty

By Sandra Erwin

Jan. 15, 2020

WASHINGTON — The military and intelligence community's space agencies may have to cope with growing instability in outer space if the United States and Russia don't renew the 2010 New Strategic Arms Reduction Treaty (New START) that is set to expire on February 5, 2021, experts warn in a new report.

A study released Jan. 15 by the Aerospace Corporation's Center for Space Policy and Strategy notes that abandoning the New START Treaty could not only reignite a nuclear arms race but also destabilize outer space.

If U.S. President Donald Trump and Russian President Vladimir Putin allow the treaty to expire, limits on U.S. and Russian nuclear arms will cease as well as prohibitions on interference with space-based "national technical means" that are used to verify treaty compliance, the Aerospace report says. Space-based national technical means include satellites operated by the National Reconnaissance Office and the Defense Department.

Michael Gleason, senior strategic space analyst at Aerospace and co-author of the paper, said the United States and Russia have for decades maintained a de facto ban on interfering with each others' surveillance and military satellites but that could change in the absence of an arms control regime.

The United States might have to prepare for the possibility that Russia could try to interfere with both U.S. government and commercial remote sensing assets, Gleason said Jan. 15 at an Aerospace Corp. news conference in Arlington, Virginia.

At stake is a "50 year legacy of prohibition on interference that helped establish legitimacy of overflight," he said.

The study considers scenarios that could unfold if New START is not extended. A likely outcome is that "strategic stability in space may suffer," he said.

The treaty was signed April 8, 2010 in Prague by Russia and the United States and entered into force on Feb. 5, 2011.

A key concern for the U.S. military — both for U.S. Space Command and the U.S. Space Force — is that if the treaty is not renewed there could be a higher demand for satellite surveillance of Russia's nuclear capabilities because there won't be on-site inspections, Gleason said. That would incur an "opportunity cost" if satellites have to be tasked to do additional imaging and pulled away from other areas.

Another concern is the possibility that Russia would try to interfere with military constellations like the Space Based Infrared System, the Global Positioning System and strategic communications satellites which are considered part of the national technical means that support treaty compliance. "If NTM overflight legitimacy is broadly challenged, space stability will be significantly worse than today," the report says.

Neither the United States nor Russia have identified what satellites are considered national technical means but it might be worth rethinking that policy in the absence of New START, the report says. “Reaching a separate agreement on noninterference with NTM seems more likely if specific satellites, on all sides, are identified as NTM.” That does not mean specific spacecraft capabilities would need to be revealed, but “removing the ambiguity over which satellites are NTM might be judged worthwhile in order to proactively shape the future strategic context in space.”

Deterring aggression in space is “more important than ever,” says the report. It suggests that revealing the identity of NTM spacecraft might strengthen deterrence as adversaries have to know about one’s capability to be deterred by it.

The end of New START would give the United States the opportunity to reconsider the current policy of not attributing interference against U.S. satellites, the study says. “The current reasons for not publicly attributing incidences of interference has been the concern that attributing interference may divulge U.S. technological capabilities.”

Attributing interference could subject the United States to criticism by other countries, but the study suggests that public attribution of bad behavior could shape the strategic environment by reinforcing noninterference as an international norm of behavior. “The national security space enterprise could follow in the vein of the cybersecurity community, in which incidences of cyber interference and attacks are publicly ‘named and shamed’ comparatively aggressively,” the study says.

Gleason noted that different types of satellites may be considered national technical means. Imaging satellites and synthetic aperture radar satellites collect detailed imagery of things on the ground, such as inter-continental ballistic missiles and aircraft. Other satellites detect electronic signals, which may provide insights into a missile’s or missile launcher’s performance. U.S. missile launch warning satellites such as Defense Support Program and Space-Based Infrared System spacecraft detect the heat generated by a missile launch, and monitor Russian ICBM and submarine-launched ballistic missiles launch tests.

GPS could be put in the NTM category as well because of its nuclear detection capability, the study says. GPS detects the flash and radiation of nuclear detonations and may be used to verify compliance with the Limited Test Ban Treaty and the Comprehensive Test Ban Treaty.

The impact of not extending New START on space security also was addressed by CNA analyst Vince Manzo in a March 2019 report.

Without New START, the United States would “face an opportunity cost of diverting scarce national technical means, such as satellites, and technical analysts from other missions,” Manzo wrote. Neither the United States nor Russia “would have the same degree of confidence in its ability to assess the other’s precise warhead levels.”

<https://spacenews.com/study-raises-prospect-of-space-conflict-if-u-s-and-russia-abandon-nuclear-arms-control-treaty/>

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VOA (Washington, D.C.)

Why EU Powers Rejected Trump's Call to Leave Iran Nuclear Deal

By Michael Lipin

Jan. 11, 2020

European powers have rejected U.S. President Donald Trump's call for them to join him in abandoning the 2015 nuclear deal with Iran, the Joint Comprehensive Plan of Action, with several factors pushing them to try to keep the deal alive, analysts say.

After European Union foreign ministers held an emergency meeting in Brussels Friday to discuss escalating Middle East tensions, EU foreign affairs chief Josep Borrell said the 28-nation bloc will keep doing whatever it can to save the deal. Under the agreement, world powers offered Iran relief from international sanctions in return for limits on its nuclear program.

Trump had called on the JCPOA's three EU signatories — Britain, France and Germany, all traditional U.S. allies — to “break away” from the deal in a Wednesday speech detailing his response to Iranian missile strikes on U.S. forces in Iraq the previous day. Iran launched the attacks, which caused no casualties, in retaliation for what the U.S. called a self-defensive strike that killed top Iranian general Qassem Soleimani in Baghdad last week.

President Donald Trump addresses the nation from the White House on the ballistic missile strike that Iran launched against...

President Donald Trump addresses the nation on the ballistic missile strike that Iran launched against Iraqi air bases housing U.S. troops, Jan. 8, 2020, in Washington, as Vice President Mike Pence and others looks on.

“The very defective JCPOA expires shortly anyway, and gives Iran a clear and quick path to nuclear [weapon] breakout. The time has come for the United Kingdom, Germany, France, Russia and China to recognize this reality,” Trump said. Iran has long insisted its nuclear program is for peaceful purposes.

“We want to save this deal if it's possible,” Borrell told reporters after chairing the EU foreign ministers' talks in Brussels. “Thanks to this deal, Iran is not a nuclear power,” he added.

Dispute resolution mechanism

Borrell also said the EU powers had not discussed triggering the JCPOA's dispute-resolution mechanism in response to Iran's series of breaches of JCPOA limits on nuclear activities in recent months or its latest threat to scrap restrictions on uranium enrichment, a process that can be diverted to nuclear bomb-making.

Diplomats have warned that Britain, France and Germany could activate the agreement's dispute mechanism if Iran does not return to full compliance. Such an activation could lead to a U.N. Security Council “snapback” of international sanctions on Iran, a move that Tehran has said would prompt it to quit the deal and end any remaining restraints on its nuclear program.

Trump has vowed that he will never allow Iran to obtain a nuclear weapon and refused to rule out military action to prevent such an outcome.

One factor pushing EU powers to try to keep the JCPOA alive is the fear that triggering a dispute process that leads to a U.N. sanctions snapback could push the U.S. and Iran into a war.

“Any conflict between Iran and the U.S. will happen at the EU’s doorstep, and they will be the ones who will pay a price for it, in the form of waves of refugees and radicalization that would end up on European shores,” said Ali Vaez, an International Crisis Group analyst, in a VOA Persian interview.

EU powers also appear to be waiting for Iran to make the next move in its series of JCPOA breaches.

Tehran has yet to say when and by how much it will expand uranium enrichment, as it threatened to do after the Jan. 3 U.S. killing of Soleimani. Tehran also has said the International Atomic Energy Agency can keep monitoring its nuclear sites and the JCPOA breaches are reversible if European powers help the Iranian economy to circumvent crushing U.S. sanctions.

Hudson Institute analyst Michael Doran told VOA Persian that Iran would have to behave so brazenly in any further breaches of the JCPOA that it generates a backlash for EU powers to feel compelled to trigger the dispute mechanism.

“I think the Iranians understand that it’s not in their interests do that, so they will calibrate their nuclear steps very carefully,” he said.

Waiting game

As EU powers wait for U.N. inspectors to verify the extent of Iran’s breaches of the JCPOA before deciding their next move, the U.S. may not exercise the same degree of patience.

A State Department legal opinion reported by the Associated Press last month said the U.S. has a legal avenue to demand a snapback of U.N. sanctions without waiting for the JCPOA’s joint commission to conclude its dispute process. Trump withdrew the U.S. from the JCPOA in 2018, saying it was not tough enough on Iran.

Trump’s Republican allies in Congress, including Senators Ted Cruz and Lindsey Graham, have urged him to invoke the U.N. snapback of sanctions in response to Iran’s threat to back out of JCPOA limits on uranium enrichment. U.S. officials have not said whether they will heed that call.

Trump critics have disputed the State Department’s legal opinion, saying the U.S. can only trigger the U.N. snapback if it actively participates in the JCPOA and its dispute mechanism.

“I’ve talked with the Europeans, Russians and Chinese. No one recognizes that interpretation that the U.S. has, so they don’t take this threat seriously,” Vaez said.

EU powers also face little pressure from their domestic constituencies to walk away from the nuclear deal.

“This is not a top priority for the European public,” Vaez said. “There are a lot of other issues they care about more, like the future of trade, the NATO alliance and 5G mobile technology.”

This article originated in VOA’s Persian Service.

<https://www.voanews.com/middle-east/voa-news-iran/why-eu-powers-rejected-trumps-call-leave-iran-nuclear-deal>

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The Hill (Washington, D.C.)

US Ambassador: 'I Was Personally Surprised' North Korea Did Not Send 'Christmas Gift'

By Justin Wise

Jan. 16, 2020

The U.S. Ambassador to South Korea said Thursday that he was "personally surprised" and "glad" that North Korea's threatened "Christmas gift" did not come to fruition.

"You can say that I personally was surprised. But I'm glad also ... there was no Christmas gift," Harry Harris told reporters in Seoul, according to The Associated Press. "Washington was ready for any eventuality, and we were all glad that there was no ICBM test or nuclear test."

"[Trump and South Korean President Moon Jae-in] are keeping the door open to negotiations and hoping Kim Jong Un will walk through that door," he added. "So the ball is in his court."

Amid stalled nuclear talks with the U.S., North Korea warned late last year that President Trump actions would impact which "Christmas gift" Washington received as a deadline for a denuclearization deal inched closer. The warning led to concerns that North Korea would conduct a major weapons test to start the new year. No new weapons test has taken place, despite the U.S. not meeting the December deadline to make concessions to North Korean leader Kim Jong Un.

Kim first met with Trump in a 2018 summit in Singapore, where he committed to a deal in which the entire Korean Peninsula would be denuclearized. Trump and Kim also agreed to improve relations between the nations, but later summits with the leaders produced no progress in denuclearization talks.

Trump lashed out at Kim in December after North Korea reported a "very important test" at a rocket site, tweeting that Kim "is too smart and has far too much to lose, everything actually, if he acts in a hostile way."

Harris added Thursday that Trump still believes Kim will live up to the agreement reached in Singapore in 2018.

"Trump ... is still confident that Kim Jong Un will meet the commitment that they both made together in Singapore," Harris said. "We should focus on President Trump's view that there is room for discussion here."

The AP noted that the possibilities for renewed negotiations remain unclear. Kim has reportedly stated that he would not denuclearize if the U.S. continued to act in a "hostile" manner. He also late last year warned of taking a "new path" in 2020 engendering fears that the country would restart testing nuclear bombs and long-range missiles.

<https://thehill.com/policy/international/478536-us-ambassador-i-was-personally-surprised-north-korea-did-not-send>

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COMMENTARY

Bulletin of the Atomic Scientists (Chicago, Illinois)

Hypersonic Missiles: Why the New “Arms Race” Is Going Nowhere Fast

By Andrew W. Reddie

Jan. 13, 2020

Speaking on December 24, 2019, Russian President Vladimir Putin marked the deployment of Russia’s first nuclear-capable hypersonic missile system, noting, “Today, we have a unique situation in our new and recent history. [Other countries] are trying to catch up with us. Not a single country possesses hypersonic weapons, let alone continental-range hypersonic weapons.”

The question that is now facing policy makers in Washington, Beijing, London, and elsewhere is whether and how this deployment reshapes strategic stability.

The answer, perhaps counterintuitive amid the hand-wringing over Moscow’s announcement, is not much. In reality, the systemic consequences of hypersonic missiles will be minimal to nil, and the narrative that Washington is “behind” in a hypersonic arms race fails to take into account the different strategic challenges facing China, Russia, and the United States—not least that the United States need not overcome an adversary’s missile defense systems.

Maneuverable missiles. Hypersonic missiles travel faster than Mach 5 (approximately 3,800 miles per hour) and have the ability to maneuver during flight. Existing research and design efforts associated with hypersonic weapons have focused on two types of missile technologies. The first, a boost-glide vehicle, is designed to sit on top of an existing ICBM and to be launched on a normal ballistic trajectory before being released and maneuvering to a target without any additional propulsion. Russia’s recently-deployed Avangard system serves as an example of this type of hypersonic weapon. The second type, perhaps more complex to develop and deploy, is a hypersonic cruise missile. This type of weapon involves a supersonic combustion ramjet or turboramjet engine that would provide in-flight propulsion, and this feature would allow it to travel at significantly lower altitude than its boost-glide counterpart. In both cases, though these missiles are named for their speed, it is their potential maneuverability that represents the central concern surrounding the effects of their deployment.

Hypersonics and missile defense. Just as missile defense systems represent an antidote to traditional nuclear missiles that travel on a ballistic trajectory, hypersonic weapons represent an innovation to overcome these defenses. As a result, it is difficult to discuss the strategic effects of hypersonic weapons without taking into account the current state missile defense capabilities.

Among those who frame hypersonic weapons as a strategic game-changer, there are three aspects of missile defense that are too often ignored. First, missile defense technologies remain in their infancy, with the United States the only country possessing significant numbers of deployed missile defense systems. Second, US capabilities are explicitly deployed to deter North Korea and Iran—peer or near-peer competitors like Russia or China. As the 2019 Missile Defense Review notes, “Today’s US missile defenses provide significant protection against potential North Korean or Iranian ballistic missile strikes against the US homeland, and will improve as necessary to stay ahead of missile threats from rogue states.” Finally, amid a mixed test record with debates surrounding the appropriateness of test conditions, it remains unclear whether existing US missile defense technologies are as successful as policy makers might like.

In light of the above and in the near term, Moscow's deployment of hypersonic nuclear weapons changes little. Given that US missile defense systems are not designed to address the threat posed by peer competitors with large numbers of nuclear weapons, the vulnerability of the United States to a nuclear attack from Russia is the same in January 2020 as it was in November 2019, prior to Russia fielding this class of weapon. The fact that both Washington and Moscow rely on their respective mutual vulnerability—not missile defense technologies—to deter nuclear warfare remains unchanged. Among those who theorize that missile defense itself is destabilizing, hypersonic missiles may actually strengthen strategic stability by reinforcing rather than degrading the mutual vulnerability upon which nuclear deterrence rests.

Characterizing the hypersonic “arms race.” Alongside concerns surrounding strategic stability, US policy makers have also expressed concern that the United States is “behind” in a hypersonic arms race—with deployment of US hypersonic capabilities currently slated for 2022.

To the extent to which there is a “race” surrounding hypersonic weapon systems at all, Russia and China do enjoy an advantage in the development of hypersonic technology—measured by the number of successful hypersonic weapon tests. Prior to Putin's announcement, China's DF-ZF boost-glide vehicle had achieved the most success in testing, while India and France are reported to be close behind.

Against the backdrop of a historical record in which Moscow has long had more diverse nuclear options compared to the United States, what should military analysts make of the US failure to develop and deploy hypersonic weapons first?

The answer: very little.

As noted above, the United States is the primary developer of missile defense technologies, with Moscow and Beijing registering their objections to various US deployments in Europe and East Asia over the past two decades. Amid concerns that US missile defense systems might eventually be used against them—and particularly in the absence of their own missile defense capabilities—investment in hypersonic weapons makes sense for both Moscow and Beijing. In the language of strategists, research and development of hypersonic weapons represent a “hedge” against future advancements in US missile defense technologies. This driver is not present for the United States. As such, nuclear-armed hypersonic weapons would provide few if any appreciable benefits to the existing US nuclear capabilities encapsulated in the nuclear triad. This reality is also reflected in the fact that the current research and development programs in the United States focus on conventional rather than nuclear payloads for hypersonic weapon systems. Others have also noted that this conventional focus increases the accuracy requirements of US hypersonic weapons—which may explain some of the delay in their deployment.

Commentary suggesting that increased US investment in hypersonic weapons is needed to “match” or “lead” are also incongruous with the various offset strategies used by the United States to engage in military competition over the past six decades. For example, faced with superior Russian conventional forces in Europe in the 1950s, Eisenhower armed a much smaller US ground force with battlefield nuclear weapons—using a technological solution to asymmetrically compensate for a strategic disadvantage. More recently, the third offset strategy sought to “include autonomous learning systems for handling big data and determining patterns, human-machine collaboration for more timely relevant decision making, and assisted human operations”—and using these technological capabilities as a force multiplier. In both cases, military planners did not seek to match an adversary capability for capability. Instead, they sought a policy solution that addressed the underlying strategic threat. These offset strategies offer benefits both in terms of flexibility and reducing the resource cost of strategic competition, and it is unclear why this logic would be abandoned in the context of hypersonic missile threats.

Hypersonic risks. So, should we be concerned about hypersonic weapons?

In terms of both systemic consequences and the US position on the proverbial hypersonic leaderboard, the answer is no.

There are, however, real—if largely ignored—concerns that hypersonic weapons deployed in regional contexts (to assure allies, for example) may increase the risks of inadvertent escalation. The development and deployment of conventional hypersonic missile systems may also lead to a failure among parties in a conflict to discriminate between conventional and nuclear attacks.

Instead of worrying that hypersonic weapons are revolutionizing warfare, or that adversaries are ahead, it is these incremental concerns that should be the focus for both scholars and policy makers moving forward.

<https://thebulletin.org/2020/01/hypersonic-missiles-new-arms-race-going-nowhere-fast/>

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Politico (Washington, D.C.)

Russia Is Beefing Up Its Nuclear Arsenal. Here's What the U.S. Needs to Do.

By Eric Edelman and Franklin C. Miller

Dec. 31, 2019

Eric S. Edelman was undersecretary of defense for policy, 2005-2009 and is counselor at the Center for Strategic and Budgetary Assessments.

Franklin C. Miller served as special assistant to President George W. Bush and senior director for defense policy and arms control on the National Security Council staff 2001-2005. He is a principal of the Scowcroft Group.

The Russian government just announced its Avangard hypersonic missile to the world—intensifying the dispute about the future of U.S. arms control agreements with Moscow. The debate playing out among national security professionals, in the media and in select precincts of Congress is over whether to extend New START Treaty, a nuclear arms reduction agreement between the U.S. and Russia that was signed and ratified in 2010 and is up for renewal in 2021.

The problem with the squabble over the fate of New START, however, is that it assumes only two potential courses of action: either extend the treaty for five years unconditionally or allow it to expire in the hope of pursuing a more far reaching pact. Members of the disarmament community are pushing for the former option while some defense hawks have expressed interest in the latter.

There is a third, more realistic and more achievable approach: The U.S. should renew the treaty, but only if Russia agrees to negotiate a new one.

New START is a product of its time, reflecting the heady hopes of the early Obama years that both the U.S. and Russia wanted to reduce the salience of nuclear weapons. Although the treaty—by resurrecting a Reagan-era discount for bomber carried weapons—actually increased the number of nuclear weapons allowed to both sides compared to its predecessor (the 2002 Moscow Treaty), it arguably made a modest contribution to stability: It continued limits on traditional U.S. and Russian strategic nuclear weapons and allowed the resumption of onsite verification inspections.

Today's security situation is vastly different from the one that faced the United States and its allies a decade ago. In addition to modernizing its strategic nuclear forces over the past nine years—a task upon which the U.S. is only now embarking—Moscow has fielded a wide array of air-, sea- and

ground-launched shorter-range nuclear forces that threaten our NATO allies but aren't limited by New START. Indeed, the Senate, in its resolution ratifying the treaty in 2010, called explicitly for future negotiations with Russia to address the asymmetry between the two sides in shorter-range nuclear weapons. Those negotiations still haven't taken place. Russia has also devised a military doctrine that appears to call for the use of these weapons on the battlefield against NATO to achieve an early victory in wartime.

Additionally, Moscow is developing new and exotic intercontinental nuclear weapons—including a transoceanic torpedo, a nuclear-powered cruise missile and an air-launched hypersonic glide vehicle. These weapons, which don't have U.S. equivalents, are not constrained by New START either, even though they clearly present a direct threat to the U.S. homeland.

A simple extension of New START therefore would ignore these new, growing nuclear threats and would even enable their unconstrained expansion. In other words, it would undercut Western security while providing an illusion of stability. But New START's impending expiration could provide leverage for negotiating a new treaty, one that would eventually address the new threats.

To this end, the administration should propose to extend the current version of New START on a renewable basis subject to Moscow's acceptance of two conditions.

First, Russia will agree to begin immediately meaningful negotiations on a new treaty that would capture all U.S. and Russian nuclear weapons regardless of range and would eventually replace New START. One approach to this might be to set an overall limit on each side's nuclear arsenal accompanied by a sublimit on the number of intercontinental-range nuclear weapons of all types.

Second, to avoid dilatory negotiating tactics by Russia, the United States will reserve the right each year to condition its continued adherence to New START based on the progress—or lack thereof—made at the negotiating table during the previous year.

Some skeptics doubt that Moscow would be inclined to accept these conditions. But the Russian government appears concerned that the Trump administration will allow New START to expire. Scarcely a day passes without a statement—designed to influence U.S. and Western opinion—by Russian President Vladimir Putin, Foreign Minister Sergey Lavrov or another senior Russian official about the perils of the treaty's expiration and Russia's willingness to extend it. The Russian government is also well aware that the U.S. strategic modernization program is finally going to begin producing new platforms in the next few years and is concerned that those open production lines, if unconstrained, could produce numerically superior U.S. nuclear weapons in the decades ahead. When President Donald Trump spoke with Putin on Sunday, the two reportedly discussed “future efforts to support effective arms control.” Moscow has an obvious self interest in taking this proposal seriously.

There are some who argue that the U.S. should scrap New START in 2021 and replace it with a new treaty with Russia. But there are downsides to that approach. First there is a nontrivial risk that—as soon as the New START limits lapse—the Russians will use their hot production lines for two new road-mobile missiles as well as a new heavy intercontinental ballistic missile to rapidly increase their ICBM inventory—all while the U.S. has yet to begin production on its own new generation ICBMs. There's also the fact that in the past, the Russians have insisted that any new negotiations would need to include China, Britain and France, which would surely slow any new treaty process way down—if not make a final agreement next to impossible. Lastly, Moscow has yet to agree that their new weapons should be included in any new negotiations. As a result, trying to leverage their interest in New START extension is likely to yield a better outcome for the U.S. than simply allowing the treaty to expire.

An alternative approach raised by some, including Trump, suggests the U.S. should scrap New START and instead aim for a new arms treaty that includes China as well as the United States and Russia. But the prospects for trilateral arms control are relatively slim. China's nuclear forces are much smaller than those of the U.S. and Russia, and both Moscow and Washington would look askance at an agreement that ceded equality to Beijing. This would risk activating China's traditional rejection of "unequal treaties." China, with its aversion to transparency, is also unlikely to accept intrusive verification inspections. And that's all before you consider the inherent difficulties of negotiating a tripartite agreement, with any three countries. As a result, a three-way deal should not stand in the path of the more immediate task of putting limits on all Russian nuclear weapons.

All that being said, both the U.S. and Russia should seek China's inclusion in arms control talks at some point. Despite persistent attempts through three administrations to increase dialogue and transparency with regard to nuclear weapons, the China's approach remains largely opaque—and that is as disquieting to Moscow as it is to Washington. What we do know is that China, stimulated by technological developments and the emergence of regional rivals like India, has begun a quantitative and qualitative nuclear modernization program that includes new road-mobile ICBMs, submarine-launched ballistic missiles and an air-launched cruise missile. The advent of these new systems is prompting a reconsideration of China's traditional strategy of minimal deterrence. China's nuclear build-up, if allowed to continue unchecked, could undermine U.S. extended deterrence guarantees to treaty allies in Asia, including Japan, South Korea, Australia and New Zealand.

What might make such a multilateral negotiation easier to contemplate in the future? A good first step might be to have the U.S., Russia, Britain, France and China join a politically binding—i.e., nonverifiable—statement that declares each nation's nuclear stockpile size and commits them to freeze the arsenals at that level for a given period of time.

We are entering an age of great power competition in which all three major nuclear powers are modernizing and new capabilities are adding complexity to an already unprecedented multipolar nuclear arms competition. It stands to reason that new approaches rather than a reflexive reliance on Cold War arms control approaches will be necessary to meet this challenge.

<https://www.politico.com/news/magazine/2019/12/31/russia-nuclear-arsenal-new-start-091487>

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Defense News (Washington, D.C.)

Iran Attack Highlights US Missile Defense Vulnerability

By Bradley Bowman, Andrew Gabel, and Mikhael Smits

Jan. 13, 2020

The Iranian regime fired 16 ballistic missiles into Iraq on Jan. 8 at bases housing American troops. With no ballistic missile interceptors in range, U.S. forces could only watch and wait for impact. While no American or coalition partners were killed in the attack, next time could be different.

Iran launched its missiles from three sites in Iran, with 11 striking a base in Ain al-Asad and one hitting a base in Erbil. The lack of casualties should not lull planners into a false sense of security. A closer look at the attack demonstrates the need for additional ballistic missile intercept capacity.

Why did Tehran pick these targets? Since Qassem Soleimani was killed in Iraq, the idea of striking U.S. forces in Iraq was almost certainly appealing to Iranian leaders. Additionally, for domestic consumption, Iran's leadership wanted to present dramatic images of the Iranian military launching a barrage of ballistic missiles toward U.S. troops.

But Iran may have chosen Ain al-Asad and Erbil specifically because the bases lacked ballistic missile defenses. Images of American defenses destroying the incoming Iranian missiles would have severely undercut Tehran's political objectives for the attack.

By creating a risk of interception, American missile defenses not only protect American lives, they complicate adversary military planning by injecting additional operational constraints, unknown variables and political risk. In short, robust U.S. missile defenses directly undermine our adversaries' investments in missiles.

Yet, while the U.S. has defense systems capable of protecting the bases at Ain al-Asad and Erbil, the bases remained vulnerable because the U.S. lacks sufficient ballistic missile defense intercept capacity.

The U.S. possessed advance knowledge of the launches, tracked the missiles once airborne and provided its troops with early warning of their impending impact. But there were no interception options once the missiles were launched.

The Pentagon had deployed its finite inventory of Middle East-deployed, high-demand Patriot missile batteries elsewhere in the region to bases that the Pentagon deemed a higher priority. This has included, for example, bases in Saudi Arabia, Kuwait, Bahrain, Qatar and the United Arab Emirates.

This decision, however, left roughly 5,000 U.S. troops in Iraq within striking distance of Iran without sufficient ballistic missile defenses.

Some might argue that the lack of casualties in the Iran strike demonstrates that such protection is not necessary. It would, however, be ill-advised and dangerous to assume a future Iranian missile attack against forward deployed U.S. troops would fail to inflict serious American casualties.

Following the attack, there has been widespread speculation about Tehran's intentions. The debate has centered on whether Iran merely sought a face-saving but casualty-free assault that it could highlight for domestic consumption, or whether it was actually seeking to kill Americans, as the chairman of the Joint Chiefs of Staff, Gen. Mark Milley, indicated.

In crises and military conflicts, an adversary's intentions can change quickly; it is therefore at least as important to focus on enemy capabilities.

Given the size of Iran's ballistic missile arsenal, Wednesday's attack was relatively modest in scale. As a 2019 Defense Intelligence Agency report assessed, Iran's missile capabilities are formidable.

"Iran has the largest missile force in the Middle East, with a substantial inventory of close-range ballistic missiles (CRBMs), short-range ballistic missiles (SRBMs), and medium-range ballistic missiles (MRBMs) that can strike targets throughout the region as far as 2,000 kilometers from Iran's borders," the report noted.

In addition, the DIA reported that Iran is working to increase the accuracy of its missile arsenal.

It is worth remembering the precision and sophistication of Tehran's attack against Saudi oil facilities last September, which combined drones and cruise missiles to deliver a pinpoint attack and temporarily knocked out half of Saudi Arabia's oil production capacity.

While Tehran reportedly did not employ drones and cruise missiles in the Jan. 8 attack, there is little to preclude Tehran from using such weapons and tactics in the future. A barrage of a hundred or more ballistic and cruise missiles, as well as drones, targeting major U.S. bases throughout the region could incur a deadly result.

In a future crisis, insufficient missile defense could force Washington to conduct a risky preemptive strike, or in the case of American casualties, a retribution strike. Either scenario is escalatory and avoidable.

The U.S. Army has wisely made air and missile defense one of its top six modernization priorities. Ensuring U.S. soldiers have next-generation capabilities is important, but commanders must also have those capabilities in sufficient quantity.

The Jan. 8 attack should demonstrate for Americans the value of missile defense and the fact that the U.S. currently does not have enough.

Bradley Bowman is senior director for the Center on Military and Political Power at the Foundation for Defense of Democracies, where Andrew Gabel and Mikhael Smits are research analysts.

<https://www.defensenews.com/opinion/commentary/2020/01/13/iran-attack-highlights-us-missile-defense-vulnerability/>

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Real Clear Defense (Washington, D.C.)

Escalation and Deterrence in Syria

By Itai Shapira

Jan. 15, 2020

The chances of military escalation between Israel and Iran have steadily risen in recent months. Israel has struck Iranian targets in Syria and Iraq; Iran has retaliated, and Russia has done little to actively minimize Iranian presence in Syria while trying to limit Israeli freedom of action. The longer these dynamics continue unabated, the more likely a confrontation between Israel (probably backed by the United States), Iran and its proxies, Hezbollah, the Syrian military, and perhaps even Russian forces might seem. In the aftermath of the U.S. killing of Soleimani, Iranian Quds Force Commander – these chances might even increase. This creates the possibility of an unintended escalation – such as the one Israel had already experienced in the past.

However, Iran, Syria and Russia are rational, avoid unnecessary risks, know how to differentiate between vital and ad-hoc interests, and are sensitive to all forms of American and Israeli power tools. They can be deterred from reacting to Israeli and American actions relating to Syria, and perhaps even from using Syria to respond to the killing of Soleimani. However, rolling them back from preserving their mere presence and influence in Syria might prove harder.

Russia has threatened Israel not to conduct airstrikes in Syria, transferred sophisticated surface-to-air missiles to the Syrians to bolster this approach, and even deployed its own advanced air defense systems in Syria.

But Russia probably understands that targeting an Israeli airplane, let alone an American one, might have grave consequences. A military escalation might eventually weaken Russia's regional allies, thus jeopardizing their basic aspiration for competing with the U.S. in the Middle East, and translating military successes to political and economic ones.

American leverage and sanctions can drive this point home for Moscow. Though the Russians have become aggressive and bold, they are omnipotent. The U.S. should regard the Middle East as another facet, albeit minor, of the great-power competition with Russia. By doing so, the Russians can be deterred.

The Syrian regime has also been under the influence of Israeli and Western deterrence for years. Syrian air defenses have tried several times to shoot down Israeli airplanes, even succeeding once. But they also understand the fragility of their sovereignty. They know it can be endangered by military conflict with Israel, let alone with the U.S.. And they fully understand their military inferiority. They are already deterred and can be made even more reluctant to enter a military escalation.

The Iranians and their proxy, Hezbollah, have become bolder and might seem undeterred. In September 2019, Hezbollah carried out a rare attack on an IDF vehicle. The Iranians shot down an American drone, conducted a precision-guided-missile strike against oil facilities in Saudi Arabia, damaged western tankers, probably directed attacks against American facilities and personnel in Iraq, and began retaliating against Israeli strikes in Syria. Perhaps they mistakenly concluded they had deterred the U.S., and therefore were surprised by the targeting of Soleimani.

But Iran and Hezbollah avoid unnecessary risks. Israel has conducted numerous strikes in Syria in recent years, damaging Hezbollah and Iranian facilities and arms, occasionally even killing their personnel. In most cases, there was no military response. Of the few attempts to respond, most either failed or were foiled. Regarding Syria, therefore, they have already been deterred – by punishment, and by denial. This can be augmented further.

The leadership in Tehran is rational and cautious, even when violating the JCPOA. But Iran is not omnipotent; it understands the limits of its power and appreciates American and Israeli hard power. A grand war with Israel over Syria, or a provocation that unleashes American forces, might jeopardize its basic national security imperatives, including maintaining nuclear capabilities and reviving the economy.

True, the imperative to revenge the death of Soleimani and to restore deterrence – at least towards the U.S. – is now a major factor in Iranian decision-making. But even this calculus will likely be influenced by cost-benefit thinking. The domestic problems Iran and Hezbollah face have not disappeared since the death of Soleimani.

The Iranians, Syrians, Hezbollah and Russians act rationally, pragmatically, and carefully. Even if the Iranian regime is revolutionary and Russia is considered autocratic, they nevertheless employ professional risk management and structured decision making. Iranian and Shi'ite presence in Syria is important for them, but not necessarily a national security imperative. They can be deterred from entering a military confrontation with Israel, which will probably continue to defend its own (and even American) interests related to Syria.

An unintended escalation in Syria may be probable, but not predetermined. It can be averted and avoided, through robust American and Israeli deterrence. In the aftermath of the killing of Soleimani, and the Iranian search for retaliation opportunities, this deterrence campaign should be augmented, preferably with U.S.-Israeli coordination.

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<https://www.realcleardefense.com/articles/2020/01/15/escalation-and-deterrence-in-syria.html>

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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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