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## Feature Report

***“NUCLEAR WEAPONS: NNSA Should Further Develop Cost, Schedule, and Risk Information for the W87-1 Warhead Program”***. Published by U.S. Government Accountability Office; Updated Sep. 23, 2020

<https://www.gao.gov/products/GAO-20-703>

The National Nuclear Security Administration plans to replace the W78—an older type of nuclear warhead used in intercontinental ballistic missiles—with the W87-1, starting in 2030. But it's unclear if NNSA can produce enough of the W87-1's fissile cores in time to meet its planned production schedule.

NNSA estimated that the new warhead could cost up to \$14.8 billion, which could make it the most expensive program of this type to date. Upcoming design decisions for the weapon could affect cost. But the agency didn't have formal plans to assess the costs and benefits of these decisions.

Our recommendations address these and other concerns.

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# NUCLEAR WEAPONS AND DETERRENCE

University of Tennessee

## **Texas A&M System and the University of Tennessee Join Forces in Bid for Contract at Pantex, Y-12**

By UT

Sep. 17, 2020

KNOXVILLE — Top leaders of The Texas A&M University System and the University of Tennessee System announced a strategic alliance Thursday for purposes of joining a team to compete for the management-and-operations contract of the Y-12 National Security Complex in Tennessee and the Pantex Plant in Texas.

Both university systems bring extensive experience in understanding the missions of these plants and experience in working with the U.S. Department of Energy and the National Nuclear Security Administration, which oversee Y-12 and Pantex. The Texas A&M System is part of Triad National Security, which has managed Los Alamos National Laboratory since 2018. The University of Tennessee System is a member of UT-Battelle — the management team of Oak Ridge National Laboratory since 2000.

Additionally, West Texas A&M University and the University of Tennessee Knoxville, have been significant workforce development resources for Pantex and Y-12, respectively, and their roles would expand under this alliance.

“The drive to serve our nation and provide workforce training for the nation’s nuclear security enterprise are woven into our DNA at the Texas A&M System,” Chancellor John Sharp of the Texas A&M System said. “We are eager to work with the University of Tennessee System to serve these two important federal facilities.”

Y-12 and Pantex represent key nuclear production capabilities in the Nuclear Security Enterprise.

“Partnering with Texas A&M to explore ways in which our university systems can further serve the U.S. Department of Energy at Y-12 and Pantex is a no-brainer,” UT System President Randy Boyd said. “Both institutions bring experience in M&O contracting, broad workforce and talent development programs, and a commitment to serve our students, states and the nation.”

Pantex, near Amarillo, is responsible for maintaining the safety, security and effectiveness of the nation’s nuclear weapons stockpile. Work performed at Pantex includes: support of the nuclear weapons life extension programs; nuclear weapons assembly and dismantlement; the development, testing and fabrication of high explosive components; and interim storage and surveillance of plutonium pits.

Y-12, in Oak Ridge, Tennessee, is the nation’s only source of enriched uranium nuclear weapons components and provides enriched uranium for the U.S. Navy. Y-12 also performs materials science and precision manufacturing, stores enriched uranium and supports efforts to reduce nuclear proliferation risk.

The Texas A&M System currently provides engineering support to Pantex and partners with Y-12 to provide critical training for the nuclear security enterprise. The Texas A&M System also provides workforce training across a broad range of functions from nuclear criticality safety to high explosives to the NNSA. The University of Tennessee also has extensive training and collaborative programs experience with Y-12 and more broadly with the Department of Energy.

These university systems will bring a strong workforce development and training portfolio to a bid team.

The NNSA released a draft Request for Proposals (RFP) two weeks ago for the management contract of Pantex and Y-12. It can be viewed at [energy.gov/nnsa](https://energy.gov/nnsa).

The University of Tennessee is a statewide system of higher education with campuses in Knoxville, Chattanooga, Martin and Memphis; the UT Space Institute in Tullahoma; the UT Institute of Agriculture with a presence in every Tennessee county; and the statewide Institute for Public Service. The UT system manages Oak Ridge National Laboratory through its UT-Battelle partnership; enrolls about 50,000 students statewide; produces about 10,000 new graduates every year; and represents more than 400,000 alumni around the world.

<https://news.tennessee.edu/2020/09/17/tamus-tennessee-join-forces-in-dept-energy-bid/>

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USNI News (Annapolis, Maryland)

## **Senators Clash over \$8B Nuclear Security Admin Funding Holdover**

By John Grady

Sep. 17, 2020

A group of senators pressed the head of the National Nuclear Security Administration on Thursday to explain why her agency carries over approximately \$8 billion in unspent funds year-over-year that lawmakers argued could be put toward building a second Virginia-class submarine next year.

Sen. Richard Blumenthal (D-Conn.) noted the second submarine topped the Navy's unfunded priorities list and could throw off the timetable to deliver the replacement for the aging Ohio-class ballistic missile submarine fleet. Senate Armed Services Committee Ranking Member Sen. Jack Reed, (D-R.I.) and Sen. Tim Kaine, (D-Va.) also questioned the continuing billions being carried over from year-to-year when other programs are seeing cuts.

Testifying before the Senate Armed Services Committee, NNSA Administrator Lisa Gordon-Hagerty defended her agency's carry-over, saying "it's obligated for this five-year spending plan" that includes rebuilding nuclear infrastructure at its laboratories and plants, treaty compliance, nuclear non-proliferation programs and modernizing four nuclear weapons systems.

She said she was not involved in budget discussions within the Trump administration that shifted almost \$2.5 billion from the Pentagon to the Department of Energy this year. The shift almost equals the annual appropriation for the second submarine.

Ellen Lord, the Defense Department's acquisition chief, agreed. "We have zero margin on Columbia for delays," she said.

Adm. Charles Richard, head of U.S. Strategic Command, added that instead of slipping timelines for the submarine or any other strategic modernization and recapitalization project, he's asking "what's it going to take to have those programs come in on time."

When asked about the impact of selective cuts on programs like zeroing out the W93, the submarine-launched ballistic missile warhead, he said, "it wouldn't support the U.K.," naval nuclear modernization program. Risks increase when "desynchronizing the system from the weapon."

The Fiscal Year 2021 budget request for the National Nuclear Security Administration, a semi-autonomous agency in the Department of Energy, is about \$19 billion. Gordon-Hagerty said cutting

\$2 billion from her administration's budget to pay for the Virginia-class submarine would mean it couldn't meet other Defense Department requirements and deadlines for four major modernization programs.

She added the administration is keeping its scheduled priorities despite the COVID-19 pandemic.

As for the carryover, she said, "it's a reasonable amount" and the Government Accountability Office, Congress' watchdog on executive programs, agreed with her assessment. She added that only "\$340 million was unaccounted for or unspent" in FY 2019, the last year complete figures were available. The rest of that year's \$16 billion appropriation was put against five-year construction and other projects to include "my Number One priority," plutonium pit manufacturing at Los Alamos, N.M., and the Savannah River site in South Carolina.

Gordon-Hagerty said this capability hasn't been used in 40 years but is necessary for the safety of the nuclear stockpile.

Both the House Armed Services Committee and the House Appropriations Defense Subcommittee approved measures that would adhere to the Pentagon's request to add the second submarine.

But lawmakers have yet to reach a spending deal and with the Oct. 1. start of the next fiscal year looming, Congress is expected to pass a continuing resolution to keep the government-funded. Between now and that deadline, Congress will send over to the White House a stopgap appropriations bill that will last at least through the presidential election in November.

The "continuing resolution" has important restrictions on spending for new programs, killing old ones or upping funding for programs such as the Columbia-class ballistic missile submarine.

Lord added she would support a provision in the stopgap spending bill to allow the Columbia program to grow until the president signs the final appropriations act.

What brought so much attention to this part of the federal budget was the Department of Energy's failure last year to hand over its budget to the Pentagon's Nuclear Weapons Council to ensure it met defense strategic requirements, before submission to Congress.

Lord, who chairs the council, said this year the numbers were received in a timely manner. Following her guidance in May, the Pentagon, National Nuclear Security Administration and the Office of Management and Budget are reviewing Energy's proposed request for the coming fiscal year. Three-quarters of that department's budget goes to defense nuclear programs from submarines to long-range cruise missiles, to Navy propulsion systems.

In his opening remarks, Senate Armed Services Committee Chairman Sen. James Inhofe (R-Okla.) was critical attempts by House Democrats to delay or kill some modernization programs and change the way nuclear programs are reviewed by the two cabinet-level departments.

"Bad actors" in the Department of Energy "lied to us" about changes that have been worked into bills this year.

"The real threat," Inhofe said, "is one of our own making" by adding a new layer of bureaucracy, prohibiting some levels of cooperation between the NNSA and the Pentagon, destroying NNSA independence and "possibly do irreversible harm" to modernization programs to include replacing some buildings that were used in the Manhattan Project.

"We're at a tipping point," Lord said because the nation's "potential adversaries have moved in the other direction" in terms of nuclear weapons and infrastructure.

To not modernize, Richard said "strikes at the core of our credibility as a nuclear power state."

<https://news.usni.org/2020/09/17/senators-clash-over-8b-nuclear-security-admin-funding-holdover>

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Santa Fe New Mexican (Santa Fe, N.M.)

## **LANL Could Put Weapons-grade Waste in WIPP**

By Scott Wyland

Sep. 22, 2020

The National Nuclear Security Administration plans to move weapons-grade plutonium from Los Alamos National Laboratory to an underground storage site in Southern New Mexico that nuclear watchdogs say is not intended to hold such high-level waste.

The plan could pose a security risk, argued the leader of one watchdog group, who believes officials should conduct more analysis before moving forward.

About 26.4 kilograms of unspent nuclear fuel rods, which have been stored at Los Alamos' plutonium plant since 2005, must be cleared out to make room for the production of new pits, the softball-sized cores that trigger warheads, according to an August report.

A federal law limits the Waste Isolation Pilot Plant near Carlsbad to storing transuranic waste — generally, materials contaminated with man-made radioactive elements that have atomic numbers higher than uranium in the periodic table. Most of the waste is produced from recycling spent fuel or using plutonium to fabricate nuclear weapons.

The 21-year-old repository, which receives legacy weapons-production waste from the Los Alamos lab, as well as the decommissioned Hanford Site in Washington state and other sources, was shut down in 2014 after a waste drum from Los Alamos erupted in a deep underground salt cavern. The radiation leak led to a two-year, \$2 billion cleanup effort.

WIPP's permit is set to expire in 2024, but federal agencies have proposed extending its life for another 60 years, especially as the government prepares for mass pit production as part of a weapons modernization plan.

Critics warn this could lead to higher-level nuclear waste being held at the site.

Tom Clements, executive director of the nonprofit Savannah River Site Watch, said the unspent fuel rods at Los Alamos contain weapons-grade plutonium. He also contended the proposed disposal method is improper and potentially dangerous. The material could get in the wrong hands or a waste barrel could burst, he said.

The federal report issued in August, a supplemental analysis to a 2008 environmental study of the statewide effects of plutonium work at the Los Alamos lab, says the fuel rods are "mixed oxide" — a blend of uranium and plutonium oxide — which is commonly used in European nuclear reactors.

The rods were processed in France and sent to Los Alamos as prototypes for the mixed-oxide fuel that was to be produced at a Savannah River Site plant in South Carolina.

Construction of Savannah River's mixed-oxide plant was halted in 2018 due to immense cost overruns. Officials now hope to overhaul that facility to produce 50 pits a year in addition to the 30 pits that would be made at the Los Alamos lab.

National Nuclear Security Administration officials say the rods at Los Alamos are eligible for disposal at WIPP because they are “unirradiated” — meaning they were never used — and are not as radioactive as spent fuel.

“With termination of the MOX fuel fabrication facility, there is little need to retain the materials and they are taking up space,” the National Nuclear Security Administration said in an emailed statement.

Current plans call for breaking the rods into smaller pieces and repackaging them in 200 drums that would be stored at WIPP.

But Clements said breaking up the rods could leave intact many of the pellets that contain weapons-grade plutonium.

“I think they need to put it on hold until they answer a lot of the environmental and security questions,” he said.

The barrels will contain enough of this plutonium to make a half a dozen or more bombs, Clements said. That’s why mixed-oxide fuel is stored at high-level security sites, he added.

Spent fuel rods must be ground into fine granules and then blended with a material that neutralizes the plutonium, Clements said, noting Savannah River Site has the only facility that does this.

He said nuclear officials appear to be looking at a shortcut. “They’re trying to avoid shipping it across the country.”

The supplemental analysis for Los Alamos National Laboratory’s proposed pit production program makes a few scattered references to repackaging the fuel rods to make space for resuming and expanding pit production at the plutonium facility.

“It’s cursory and inadequate,” Clements said. “Is WIPP the best place to dispose of it? Maybe. But it needs more in-depth analysis.”

[https://www.santafenewmexican.com/news/local\\_news/lanl-could-put-weapons-grade-waste-in-wipp/article\\_3090c11c-f9c1-11ea-a78e-07dc11335178.html](https://www.santafenewmexican.com/news/local_news/lanl-could-put-weapons-grade-waste-in-wipp/article_3090c11c-f9c1-11ea-a78e-07dc11335178.html)

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National Defense (Arlington, Va.)

## **Navy to Protect Columbia Program at All Costs**

By Jon Harper

Sep. 17, 2020

The Navy may face budgetary constraints and other shipbuilding challenges in 2021 and beyond. But the service will do whatever it takes to keep its Columbia-class ballistic missile submarine program on track, officials say.

The new nuclear-armed subs will replace the aging Ohio-class boats. Plans call for procuring the lead ship in fiscal year 2021 so that it can be on patrol by 2031. The Navy intends to buy 12 vessels over the life of the program at an estimated cost of \$109.8 billion.

However, potential problems on the horizon include the risk of a delay in designing and building the lead Columbia-class boat due to the COVID-19 pandemic or funding-related issues, according to a recent Congressional Research Service report titled, “Navy Columbia (SSBN-826) Class Ballistic Missile Submarine Program: Background and Issues for Congress.”



That “could put at risk the Navy’s ability to have the boat ready for its first scheduled deterrent patrol in 2031,” the study said.

The estimated procurement cost of the first boat is \$14.4 billion. The Navy has already received \$6.2 billion in prior-year advanced procurement funding. The 2021 budget request includes \$2.9 billion in procurement funding, with the remaining amount to be requested in 2022 and 2023, according to the report.

The Navy aims to procure the second boat in 2024, and has asked for about \$1 billion in advanced procurement funding in 2021.

The service has already negotiated a contract for the first two ships with prime contractor General Dynamics Electric Boat, according to Assistant Secretary of the Navy for Research, Development and Acquisition James “Hondo” Geurts. “We’ll be able to award that as soon as it is authorized and appropriated,” he told reporters during a recent teleconference.

However, fiscal year 2021, which starts Oct. 1, is expected to begin with a continuing resolution — perhaps for several months. That could throw a wrench in the Navy’s plans.

“In terms of budget I have been fairly vocal ... in our discussions with members [of Congress] that if there were a CR we would need an anomaly to be able to execute Columbia on schedule,” Geurts said.

An “anomaly” granted by lawmakers would allow the program to move forward even while other programs are restricted at fiscal year 2020 funding levels until a full-year appropriations bill is passed.

Beyond 2021, defense spending cuts could be on the table due to the economic fallout from COVID-19, analysts say. That could threaten Navy plans to ramp up the size of the fleet and introduce a variety of next-generation systems. If resources are constrained, the service knows where it wants its money to go.

“Columbia is still our top priority program and it will be a program that we ensure is resourced to be successful,” Geurts said. “It provides the strategic deterrent for our nation, and that’s not a mission that we can afford to take risk on or put at risk. And so it will be prioritized above all others as we go forward.”

Meanwhile, the shipbuilding industry has been affected by the ongoing COVID-19 pandemic, which has introduced social distancing requirements and other safety measures. A large amount of advanced construction work has already been performed on modules for the first Columbia boat. So far, the Navy has not seen any negative impacts on the program related to the coronavirus, according to Geurts.

“I’m not concerned from a — is there an ability to get the work done? — perspective,” he said. “The concern would be, do we have ... the number of productive hours available that we would normally expect? To the degree that that isn’t the case, we would prioritize the available productive workforce or productive hours on Columbia, and then the impact would be seen in other programs.”

<https://www.nationaldefensemagazine.org/articles/2020/9/17/navy-to-protect-columbia-program-at-all-costs>

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# US COUNTER-WMD

Breaking Defense (Washington, D.C.)

## **PACOM Chief Warns of Threat to Guam; China Presses Hard**

By Paul McLeary

Sep. 18, 2020

WASHINGTON: The head of the Indo-Pacific Command issued a stark warning Thursday that large US bases in the Pacific remain outgunned, and underprepared, to defend against China's massive stockpile of ballistic and cruise missiles.

"China has a profound advantage in ballistic missiles against the United States," Adm. Phil Davidson said during an online talk hosted by the Missile Defense Advocacy Alliance. "They also have a profound advantage in ground-launched cruise missiles. We have to get into that offensive force game as well."

A more pressing concern than building up US offensive firepower is protecting the massive American base at Guam, which has been a key jumping off and resupply point for US ships, bombers, and Marines for decades.

"There are billions of dollars in defense capability on Guam" alone, Davidson said. "There needs to be some investment in defending that" from Chinese weapons.

The thin line of defenses aimed at stopping ballistic and cruise missiles from striking Guam has long been a driving concern for Davidson, and he's asked repeatedly for the Aegis Ashore air defense system to be built on the island. The base's Terminal High Altitude Area Defense, or THAAD, missile defense battery can only see in a 120-degree range — and it's looking toward North Korea.

"It's going to require a much deeper, 360-degree persistent capability," he said. "It is not necessarily about designing or creating a defensive system that is impenetrable or invulnerable against the entire missile inventory of a potential adversary. Rather it is about developing a combat credible deterrent."

The admiral underscored that Guam needs that protection now and he isn't interested in waiting years for an exquisite solution. "We can't wait for some perfect solution to manifest itself in 2035 or 2040. We are in the threat environment now," he said. Davidson's focus on getting the \$1.7 billion Aegis system set up in Guam isn't new. In July he submitted a proposal to Congress to fund the work to get it to Guam by 2026.

Davidson, who warned several years ago of the "great wall of SAMs" China has emplaced in the South China Sea, maintained that Chinese superiority in the region hasn't waned.

"The vast capacity that China possesses when it comes to land-based cruise missiles and ground-based conventional missiles and where they are headed with ground-based hypersonic missiles represents an offensive threat throughout the region," Davidson said, noting that shouldn't just worry American policymakers, but their allies in the region as well.

The US can begin building new types of offensive missiles in the wake of its having walked away from the INF Treaty with Russia earlier this year, and has already tested a prototype ballistic missile that flew more than the previous limit of 500km.

## Big bases, big problems

Davidson's calls for billions more to defend sprawling, legacy bases in the Pacific shines a light on the Pentagon's biggest strength, and perhaps greatest weakness, in the Pacific region. Tens of thousands of sailors, Marines, soldiers and Airmen are stationed across the region in a footprint unrivaled by any other nation.

But those big bases are also well within range of the kinds of Chinese precision weapons the admiral talked about, and would expect to take the first hit in the first hours of any conflict, potentially setting back or curtailing the US response.

The Marine Corps and Navy have been working on plans to disperse some of those forces to the extent possible, with Marine Commandant Gen. David Berger leading the charge.

Berger has already done away with the service's tanks and some helicopter squadrons to invest in his own precision artillery capabilities, pushing for the reformation of some units as Littoral Regiments designed to move fast with their own integrated anti-air and, possibly, anti-ship weapons. The Corps and Navy are also looking to buy as many as 30 Light Amphibious Warships in coming years, which would be much smaller than their current hulking amphibious ships.

The Marines are also testing unmanned platforms to quickly refuel and rearm F-35Bs it plans to operate out of remote, austere bases in the Pacific — part of an effort to be more nimble, and unpredictable, as the traditional American dominance at sea and in the air erodes.

On the Navy side, the service has already invested in a new frigate design, and is considering even smaller corvettes that could replace the current Littoral Combat Ships.

## Arms to Taiwan

Tensions have spiked in the region over the past year, as American and Chinese ships and aircraft have jockeyed to assert dominance in the South China Sea and elsewhere.

One potential flashpoint is Taiwan. On Friday, China unexpectedly flew 18 fighter jets and bombers into the Taiwan Strait just as Keith Krach, Commerce undersecretary for economic affairs, became the most senior American official to visit the independent island in decades. He arrived ahead of a memorial service for former President Lee Teng-hui.

Visits by American dignitaries aren't the only thing rattling Beijing when it comes to the warming US relationship with Taiwan. Recent reports indicate the Trump administration is eager to sell hundreds of millions worth of new weapons to the island that would go farther than previous defensive weapons sales from previous administrations.

Under consideration are the air-to-ground AGM-84H missile that can be launched from Taiwanese F-16 fighters to hit ships in the Taiwan Strait, or even targets on the mainland.

Last year, the Trump administration announced it was selling 66 F-16s for \$8 billion to Taiwan, one of the largest arms deals ever reached with the independent island,

Other systems include the Reaper drones, the HIMARS truck-launched rocket system, and Harpoon anti-ship missiles.

In Beijing today, Chinese Defense Ministry spokesman Ren Guoqiang defended Friday's flights, calling them "a reasonable, necessary action aimed at the current situation in the Taiwan Strait and protecting national sovereignty and territorial integrity."

A similar flight took place last month when Chinese fighters briefly crossed the midline of the Taiwan Strait during a visit to Taiwan by Health Secretary Alex Azar.

<https://breakingdefense.com/2020/09/pacom-chief-warns-of-threat-to-guam-china-presses-hard/>

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## US ARMS CONTROL

Atlantic Council (Washington, D.C.)

### **After Snapback Sanctions on Iran: A European Perspective**

By Michel Duclos

Sep. 23, 2020

US President Donald Trump's withdrawal from the Joint Comprehensive Plan of Action (JCPOA) in May 2018 made his vision for the nuclear accord crystal clear: he wants it dead. On September 20, the United States re-imposed United Nations sanctions on Iran through the snapback mechanism—at least according to the Trump administration.

For the time being, the course chosen by the Trump administration is leading to an unprecedented isolation of the United States. The letter sent by US Secretary of State Mike Pompeo to the UN Security Council on August 20 was considered invalid. Thus, the international community has not consented to the snapback process nor recognized the reestablishment of sanctions after thirty days. That pointedly includes the E3—France, Germany, and the United Kingdom—which negotiated the JCPOA along with China, Russia, the US and Iran.

This is not the first time the Trump administration has allowed itself the luxury of challenging the rest of the world in such a way. Nevertheless, we are witnessing a peculiar situation in which the US has created a parallel reality while the international community stands by an opposite legal reality. The “real reality” is, in fact, a whole other matter; in practice, extraordinarily little trade is possible with Iran due to re-imposed US sanctions. As a result, the US decision is largely symbolic.

The key question now is how Iran responds. Until a few months ago, one could anticipate that Iran would react by withdrawing from the JCPOA. Indeed, this seems to have been the US rationale for snapback—provoke Iran to go too far and destroy the nuclear agreement by its own hand.

This scenario now appears unlikely. First, Iran, along with the rest of the international community, agrees that the reestablishment of UN sanctions does not exist beyond the imagination of the Trump administration. Second, since January, the Islamic Republic seems to have adopted a relatively low-profile policy towards the US. It could be that the US assassination of Quds Force commander Qasem Soleimani in January convinced decision-makers in Tehran to be more cautious. It could also be that they are waiting for the November US elections.

In any case, Iran is still active in the region through the Islamic Revolutionary Guard Corps' (IRGC) foreign arm, the Quds Force, and its proxies and is still expanding its uranium stockpile, albeit more slowly than last year. Iranian assertiveness in Syria, Iraq, Yemen, and potentially Lebanon, may still lead to incidents with US troops or, more generally, to miscalculations on one side or the other. There is also uncertainty about the potential Iranian response to the Gulf States' recent overt rapprochement with Israel, which is a major setback for Tehran. It would be unlike Iran not to react to such a move. The same can be said about the arms embargo. The isolated US position is certainly satisfying for Iran, but this satisfaction could be tarnished if potential arms providers are reluctant to sell Iran what it wants.

The Trump administration invoked snapback after failing to get the UN Security Council to extend a UN arms embargo on Iran, which is due to expire on October 18 under the terms of the JCPOA. Starting from that point onwards, the US will not hesitate to apply US sanctions to states or entities that transfer armaments to Iran or Iranian structures engaged in the arms business.

As seen from Europe, which has its own continuing embargo on arms transfers to Iran through 2023, the Trump administration will likely not insist on imposing its parallel reality on reluctant allies. That is partly because the Americans are aware that such an endeavor would fail and partly because they have more pressing matters to deal with. The Trump camp seems to believe it has achieved a significant diplomatic victory by brokering normalization agreements between the United Arab Emirates, Bahrain and Israel.

Meanwhile, the E3 and the EU have preserved enough of the legal framework of the JCPOA to facilitate a possible return to the deal by a new Democratic administration. It took great efforts on the part of the Europeans to accomplish this, especially in keeping the Iranians at least partially on board when they were fuming about Europe's inability to provide them with anticipated economic benefits.

In fact, it seems that the E3 has recently gained credibility in the eyes of the Iranians after they realized that Europe's resistance to the US on the arms embargo and the sanctions was real. That is probably one reason why Iran ultimately decided to grant the International Atomic Energy Agency (IAEA) access to two suspected former nuclear sites, which they had refused to do until now.

How could the situation develop between the US and Europe?

If Donald Trump is re-elected, it is clear that there will be little room left for transatlantic cooperation on Iran. As far as Europe is concerned, this may be of secondary concern to what can be expected from a second Trump term, such as a possible intensification of the trade dispute, new attacks on the EU and NATO, or risky policies dealing with China and Russia. But one could adopt an optimistic view; that the architects of the "maximum pressure" strategy may realize that not having their allies on board is a big handicap for the implementation of their strategy.

If Joe Biden is elected, it does not necessarily mean that the Iran issue or the transatlantic relations around it will be easy to resolve. Biden is on record saying that he will seek to rejoin the JCPOA if he wins but only if Iran also returns to compliance. In that case, the crux of the issue surrounds double compliance, not just the US's commitment to their obligations. The new administration will also want to enhance the agreement with a regional track and with negotiations on the sunset clauses of the JCPOA. This is fully in line with what French President Emmanuel Macron has suggested. However, until now, the Iranians have fiercely resisted these ideas.

In any case, from Europe's perspective, there is the risk that a Biden administration will believe that it does not need European expertise because of the many likely Biden staffers that would have first-hand experience from serving under the Obama administration. Conversely, the incredibly volatile situation in the Middle East, the complexity of the issues related to the JCPOA, and new challenges—such as the China's rising importance in the region—may make the role of the Europeans more useful than ever. During these difficult last four years, the E3 have proved capable of maintaining contact with all stakeholders, including China, Russia, Iran, and Israel. In fact, now may be the time more than ever to focus on specific points of cooperation between the US and Europe, especially if there is to be a new administration in Washington.

In the event of a renewed transatlantic dialogue, there are also Iranian political realities to consider. The "maximum pressure" policy has empowered Tehran's hardliners, something that will only be magnified by the Iranian presidential elections in June 2021. The hardliners may reject new

negotiations or focus on other priorities in them. The West would need to figure out how to adapt its approach to influence and work with a new Iranian leadership.

Second, there is the question of the consequences of Gulf-Israel rapprochement for future negotiations with Iran. The general assumption is that it will make Iran more isolated and provide the US with a stronger hand to deal with Tehran. However, by increasing tensions between Iran and its neighbors, this new paradigm could make the Biden administration's task much more complicated. Or alternatively, could the Gulf states, reassured by this new guarantee from Israel, be more inclined to accept a regional security dialogue that includes Iran? This would indeed reflect the US and Europe's common interests, but the right conditions need to be created for this scenario to happen.

In any case, whoever will be in charge in Washington could benefit from the European's expertise and contacts in the region. At the same time, for all their strong diplomatic work, Europe certainly cannot achieve its objectives single-handedly. Thus, the case for US-Europe cooperation is clear.

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<https://www.atlanticcouncil.org/blogs/iransource/after-snapback-sanctions-on-iran-a-european-perspective/>

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VOA (Washington, D.C.)

## **Vehicle Likely Large Enough to Carry Interballistic Missile Spotted at North Korea Parade Site**

By William Gallo

Sep. 23, 2020

SEOUL, SOUTH KOREA - A vehicle likely large enough to carry an intercontinental ballistic missile has been spotted at a North Korean parade training site, according to a U.S. research organization, the latest evidence Pyongyang may use an upcoming political anniversary to showcase missile technology.

38 North, a website specializing in North Korea, says commercial satellite imagery from Tuesday revealed a "probable missile-related vehicle" at the Mirim Parade Training Ground on the outskirts of Pyongyang, where the North rehearses its major military parades.

"While imagery resolution is insufficient to determine exactly what the vehicle is, relative size and shape suggests that it may be a transporter-erector-launcher (TEL) for a large missile," the website said late Tuesday.

The vehicle appears to be around 20 meters long and 3 meters wide, "which would be of sufficient size to carry a Hwasong intercontinental ballistic missile (ICBM)," the post said. "Alternatively, it could be a towed mobile-erector-launcher (MEL) with its truck-tractor attached," it added.

Satellite images suggest North Korea has been preparing for weeks to hold the parade, expected October 10. That is the 75th anniversary of the founding of North Korea's ruling Workers' Party of Korea. Such anniversaries are major events in the single-party, quasi-Stalinist dictatorship.

Some analysts predict North Korea may unveil a new solid-fuel ICBM at the parade. Others say Pyongyang could soon showcase a submarine-launched ballistic missile, or SLBM, possibly via a test launch.

Either technology adds an unpredictable new component to North Korea's arsenal. Solid-fuel missiles are easier to transport and take less time to prepare for launch. SLBMs are also mobile and easier to hide.

A major display of military power could be seen as a provocation just weeks ahead of the U.S. presidential election. U.S. President Donald Trump says he has "no problem" with North Korea's short-range launches, but he may object to a bigger move.

At the beginning of the year, North Korean leader Kim Jong Un said he would soon show off a "new strategic weapon." But since then, North Korea has had to deal with devastating floods, international sanctions that continue to hold back its economy, and the worldwide coronavirus pandemic.

North Korea for months insisted it had no coronavirus infections. But it has quietly backed away from that assertion.

Parade preparations appear to be smaller than in past years, possibly because of coronavirus concerns.

<https://www.voanews.com/east-asia-pacific/vehicle-likely-large-enough-carry-interballistic-missile-spotted-north-korea>

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# COMMENTARY

Real Clear Defense (Washington, D.C.)

## **A Non-Kinetic Answer to the Hypersonic Threat**

By E. Grant Haver & Jeffrey Edmonds

Sep. 22, 2020

Adversaries are developing new, long-range, hypersonic strike capabilities that have wide ranging security implications. America and its allies may not yet have the critical infrastructure needed to respond and manage such threats in a crisis scenario. China and Russia pose the most immediate risk as they lead the world in developing hypersonic and ballistic missile technologies. While many government agencies are working on designing and implementing the architectures and tools needed to mitigate the hypersonic threat, they lack the speed and resources required to keep pace with these rapidly evolving technologies. How or even if the U.S. should pursue missile defense technologies are questions yet to be answered. In the meantime, the government can take concrete, non-kinetic measures that will better ensure citizens' safety and counter new threats should the need arise.

Increasing awareness of the hypersonic threat with senior policymakers and within appropriate government institutions should be one of the first considerations. Enhancing understanding of the risks is the first step towards mitigating the threat from enemy systems. Such awareness includes the discussion of deterrence postures should tensions escalate. It also includes enhancing cyber capabilities, which will require an expanded, whole-of-government approach built upon a shared understanding of our vulnerabilities and available defense options.

Prior to any deployment of new missile defense technologies, American political and military leaders must acquire a better understanding of how U.S. adversaries plan to utilize hypersonic technologies in their efforts to dominate escalation and coerce the United States and its allies into making decisions favorable to the adversary during a time of crisis. Interagency wargames, briefings on adversary escalation strategies, and collaborative opportunities will also prepare U.S. policymakers to respond to crises before state actors consider using these new technologies.

The speed and low-profile characteristics of new strike system technologies will challenge the U.S.'s current capacity to detect and trace their flight path. The United States needs to deploy advanced space sensor capabilities integrated with targeting and management infrastructure. Linking these sensors to advanced interceptors and/or directed energy weapons will also play a key role in lessening the impact of any attack from hypersonics.

The U.S. Missile Defense Agency (MDA) and the Space Development Agency (SDA) are currently developing systems such as the Hypersonic and Ballistic Missile Tracking Space Sensor (HBTSS), which will help reduce the emerging hypersonic threat. This system is designed to work cooperatively with SDA's tracking satellites to provide queuing data for ground-based interceptors. Additionally, HBTSS is currently focused on low-Earth orbit, but it will be crucial that it supports multiple orbits to ensure long-term success of the system. Inadequate funding, however, is impeding a rapid development process. Currently, HBTSS is only receiving a small fraction of the total hypersonic funding budget – leaving a severe deficit in the resources required to keep pace with the development of these emerging technologies and posing a serious national security threat.

The next step is augmented system integration, especially for command and control, which is an essential component of any hypersonic defensive capability. For example, the Army's Integrated Air



and Missile Defense Battle Command System (IBCS), which utilizes open architecture, allows for the integration of various sensors and interceptors. This, in turn, enables the best sensor to relay the targeting data to the most appropriate interceptor. The Air Force's program of record – the Joint All-Domain Command and Control (JADC2) system – also holds tremendous promise for integrating disparate systems across operational domains and Services, if this “network of networks” is built using the right fundamentals and principles.

Ideally, HBTSS would integrate with this type of system to enhance the ability to meet the maneuverability challenges of hypersonics. Any advanced, space-based sensor, for example, must integrate with precise targeting and tracking infrastructure and link to advanced interceptors and/or directed energy weapons. The government's ownership of open architecture command-and-control systems should, in theory, make this easier.

The geographical advantages and safety enjoyed by the continental United States begin to erode under the threat of incredibly fast, low-visibility, hypersonic weapons capable of striking targets within the United States. Also, at risk could be our forward-deployed regional assets, such as carriers in the Pacific and U.S. military bases on Guam and Kadena. Our adversaries are currently strategizing methods of utilizing these technologies to threaten and coerce the U.S. and its allies during a time of crisis.

As China and Russia continue to develop and field hypersonic capabilities, the United States must also develop the kinetic and non-kinetic systems necessary to mitigate an attack. Swift deployment of adequate resources, awareness initiatives, and enhanced integration of systems capabilities are only the first steps in meeting this rapidly evolving national security threat.

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Jeffrey Edmonds is an expert on Russia and Eurasia and currently works as a Research Scientist for the Center for Naval Analyses and is a senior Advisor to the Joseph Rainey Center for Public Policy. His research focuses on the Russian military, foreign policy, Russian threat perceptions, and Russian information operations.

Most recently, Jeff served as the Director for Russia on the National Security Council and acting Senior Director for Russia during the 2017 presidential transition. While on the NSC, he advised the president and his senior staff on Russia-related national security topics.

Prior to the NSC, Jeff served as a senior military analyst with the Central Intelligence Agency, covering Eurasian militaries. He has served in the U.S. Army on both active duty and the reserves for 22 years, with tours in Iraq and Afghanistan.

<https://www.realcleardefense.com/articles/2020/09/22/a-non-kinetic-answer-to-the-hypersonic-threat-578242.html>

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Defense News (Washington, D.C.)

## **Why the New ICBM Contract is a Bad Deal**

By Kingston Reif

Sep. 21, 2020

While Washington's attention remains focused on the coronavirus scourge and President Donald Trump's disastrous handling of the pandemic, the Pentagon this month made another down payment on an unnecessary and dangerous planned spending binge to upgrade the nation's already excessive nuclear arsenal.

The Air Force on Sept. 8 awarded a \$13.3 billion development contract to Northrop Grumman to build a new fleet of intercontinental ballistic missiles to replace the existing Minuteman III missile. The estimated \$85 billion price tag for the new missile program, known as the Ground Based Strategic Deterrent, is part of a larger nuclear spending blueprint that is likely to top \$1.5 trillion over the next several decades.

But let the buyer — in this case, the American taxpayer — beware. ICBMs are the least valuable leg of the so-called nuclear triad. Cost overruns, which are not exactly an uncommon occurrence at the Pentagon, are likely to drive the purchase price of a new ICBM system even higher, starving other spending priorities. There are cheaper ways to maintain a credible land leg of the triad than moving full steam ahead on a new missile mere weeks before a presidential election.

Contrary to the Pentagon's positive characterization of the Ground Based Strategic Deterrent program as a "pathfinder," the effort is off to a rocky start.

The Pentagon's plan to compete the contract did not unfold as intended. Boeing said last year that it would not bid on the contract, leaving Northrop as the only remaining contender. By moving ahead with a single bidder, the Pentagon has less leverage to control costs. There is no precedent for the absence of competition for a contract the size of the Ground Based Strategic Deterrent program.

The primary mission of the ICBM leg of the nuclear triad is to deter a nuclear attack by forcing Russia, America's only nuclear peer, to have to destroy hundreds of missiles in a large-scale nuclear attack against the United States.

But ICBMs are vulnerable to such an attack unless launched within minutes of detection of the attack. Maintaining the option to launch ICBMs quickly is dangerous because it could lead the president to order the use of nuclear weapons based on inaccurate or incomplete information.

In addition, ICBMs do not provide unique capabilities. The sea leg of the triad is more survivable. The air leg is more flexible.

Even if one agrees with the justification for ICBMs, however, spending \$100 billion to buy a new ICBM is unnecessary. Deferring development of a new missile and continuing to rely on a smaller number of Minuteman III missiles is possible and would free up funds to help pay for higher-priority national security needs.

Such needs include pandemic response, maintaining the U.S. military's technological edge, shoring up the U.S. conventional military position in East Asia and combating the increasingly costly impacts of climate change.

The Defense Department has repeatedly claimed that the price to build and operate a new missile system would be less than the cost to maintain the Minuteman III. But the department arrived at this conclusion by comparing the total life-cycle cost of the two options through the 2070s.

In contrast, the Congressional Budget Office in 2017 evaluated the cost of the two options over a shorter period of time and projected that extending the life of the Minuteman III could save \$37 billion (in 2017 dollars) through the late 2030s.

The Pentagon also argues that a new missile is essential to maintain the current force of 400 deployed ICBMs and defeat advancing adversary missile defenses.

Reducing the number of ICBMs to 300 and forgoing capability upgrades would still allow the ICBM force to provide a more than sufficient deterrent capability. Reducing the number of missiles could also free up additional savings by allowing for the reconsideration of current ICBM warhead requirements.

The claim that the Minuteman III may not be able to overcome expected advances in adversary missile defenses is unconvincing, given the penetration aids that the missile is already believed to contain.

Charting a more sustainable path for the nuclear arsenal is both doable and necessary. The current plans exceed what is needed to maintain a devastating deterrent, and their opportunity costs are exacting a growing toll.

As former Air Force Chief of Staff Gen. David Goldfein warned in July, despite significant recent growth, the defense budget is not large enough to buy new nuclear and conventional forces at the same time. The pressure on the federal budget imposed by the response to COVID-19 is likely to exacerbate this challenge.

Foregoing a new ICBM is but one cost-cutting step the United States could take while still retaining a credible nuclear triad and ample leverage with which to pursue future arms control agreements.

No matter the result of the upcoming presidential election, flat spending on defense is likely to be a best-case scenario. Overinvesting in a costly new ICBM would be an enormous misstep.

Kingston Reif is the director for disarmament and threat reduction policy at the Arms Control Association.

<https://www.defensenews.com/opinion/commentary/2020/09/21/why-the-new-icbm-contract-is-a-bad-deal/>

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War on the Rocks (Washington, D.C.)

## **Kill 'Em All? Denial Strategies, Defense Planning, and Deterrence Failure**

By Evan Montgomery

Sep. 24, 2020

Should the United States be ready to destroy hundreds of Chinese vessels or thousands of Russian armored vehicles in just a few days during a conflict? Could these clear-cut yet ambitious operational objectives spur innovation within the Department of Defense? Would threats to inflict mass attrition on high-value military assets in a short span of time dissuade Beijing and Moscow from attacking their neighbors? These questions are moving to the forefront of the U.S. defense policy debate as the difficulties of preparing for great-power rivalry become more apparent.

Yet a closer look reveals how efforts to encourage outside-the-box thinking and enhance conventional deterrence have the potential to backfire without the right guidelines in place. A narrow focus on the operational problems associated with a Chinese assault on Taiwan or a Russian

invasion of the Baltics, for example, along with a corresponding emphasis on denying aggression via rapid attrition as the solution to those problems, could actually weaken deterrence in several different ways, especially if planners and policymakers do not take unintended consequences into account. Specifically, these efforts could heighten doubts about America's willingness to intervene in the moment, raise the costs of sustaining a denial strategy over time, and leave Washington ill-prepared if adversaries adjust their offensive tactics.

### Searching for Innovative Solutions to Stressing Operational Problems

The Trump administration's National Security Strategy and National Defense Strategy, released in late 2017 and early 2018, respectively, are notable for calling out China and Russia as competitors bent on overturning the status quo. Equally important, these documents also maintain that the best defense depends on denial, as opposed to punishment or rollback. According to the National Security Strategy:

We must convince adversaries that we can and will defeat them — not just punish them if they attack the United States. We must ensure the ability to deter potential enemies by denial, convincing them that they cannot accomplish objectives through the use of force or other forms of aggression.

Moreover, new military concepts and capabilities will be required to prevent rivals from achieving their aims by force. As the National Defense Strategy explains, that includes concepts and capabilities "to strike diverse targets inside adversary air and missile defense networks to destroy mobile power-projection platforms."

Denial is a tempting defense strategy for dealing with a revisionist power — especially a revisionist power that is poised to launch a sudden assault in pursuit of a *fait accompli*. After all, the ability to protect allies and partners is arguably the best way to deter attacks against them, or to win a war quickly if deterrence fails. Alternatives, like punishment and rollback, have obvious drawbacks. For instance, punishment typically involves bombarding or blockading an adversary until the costs of aggression become so high that it abandons its efforts. This strategy has a mixed if not mediocre track record, however, and many analysts are skeptical that targeting an enemy's will to resist rather than its ability to fight could prevent aggression or produce victory in a major clash. Rollback, by contrast, entails mobilizing military forces gradually and then reversing an opponent's gains. Although this strategy has worked in global conflicts like World War II and regional campaigns like Desert Storm, it also cedes ground from the start by delaying a direct response.

Despite its understandable appeal, and regardless of the particular form that it takes, a strategy of denial also has inherent challenges, which can be onerous for a geographically insular great power like the United States that is facing off against widely dispersed, well-armed, and highly motivated rivals. To start, denial can require overcoming an unfavorable balance of military power at the outset of a conflict because an aggressor would be fighting close to home and could choose the time and place of its attack. In the case of a Taiwan contingency, for example, Beijing would be massing its offensive forces across the 100-mile-wide Taiwan Strait, whereas Washington would be reinforcing its defenses in the region from over 6,000 miles away. What's more, denial can also require overcoming an unfavorable balance of interests since an aggressor cares about the issue at hand enough to initiate a war. For instance, although America has an enduring stake in the security of Taiwan — and possibly a larger stake in avoiding a world where China or Russia can invade and occupy other countries — Beijing ostensibly has a greater interest in the island's fate. Compounding these challenges, militaries are often slow to adapt and innovate when facing new threats, especially if legacy ways of warfare have not yet been discredited decisively. That could leave the United States without the tools necessary to implement an effective denial strategy as its previous military advantages continue to decline.

One way of addressing these constraints is to concentrate on a set of straightforward but stressing operational problems. For instance, if Pentagon planners are most concerned that adversaries might conduct large-scale amphibious or armored assaults that overwhelm frontline states before Washington can defend them, then they could opt to focus more intently on destroying large numbers of critical targets, during small windows of time, inside of contested areas.

The history of military innovation shows that specificity is often crucial for success. Simply put, organizations that tackle well-defined problems are more likely to devise novel and effective solutions. Channeling this insight, former Deputy Secretary of Defense Bob Work has proposed giving each of the services a goal of killing approximately 350 Chinese vessels or 2,400 Russian armored vehicles in 72 hours, and reserving a significant pot of money for the branch with the best response. In theory, this should catalyze new ideas due to the clarity of the military objective, the promised budgetary reward, and salutary effects of interservice competition, which are often lost when senior leaders emphasize joint solutions from the very start. “Give goals to the joint force that they have to solve,” he has argued, “and I guarantee you, that will generate operational concepts.”

Achieving these goals should also keep rivals on guard and in check. According to former Undersecretary of Defense for Policy Michèle Flournoy:

If the U.S. military had the capability to credibly threaten to sink all of China’s military vessels, submarines, and merchant ships in the South China Sea within 72 hours, Chinese leaders might think twice before, say, launching a blockade or invasion of Taiwan; they would have to wonder whether it was worth putting their entire fleet at risk.

Not only would this enhance conventional deterrence by denial, insofar as China would be unable to conduct a brute force assault or count on militarized economic coercion, but the ability to wipe out expensive and prestigious assets such as modern submarines and surface combatants could have the added bonus of contributing to conventional deterrence by punishment.

#### Putting Will, Endurance, and Relevance at Risk

At first glance, concentrating on these operational problems and challenging the services to pursue denial via the rapid attrition of high-value enemy platforms seems like a sensible way to break through innovation barriers, prevent latent threats from manifesting, and bring strategy and operations into alignment. Indeed, it might offer the best chance of turning the aspirations of the National Security Strategy and National Defense Strategy into concrete actions. Even if senior leaders throw down this gauntlet and service planners successfully meet the challenge, however, there are several risks that could arise. Specifically, a narrow focus on these operational problems could heighten the prospect of deterrence failure via three distinct mechanisms: a lack of will, a lack of endurance, and a lack of relevance.

First, the rapid attrition objective could fuel doubts about Washington’s determination to uphold its threats and intervene on behalf of a beleaguered partner during a crisis. The measures required to achieve denial in this fashion are bound to create escalation concerns, even if one sets aside the extreme possibility that adversaries might resort to nuclear use after sustaining major losses — a potentially suicidal gamble, particularly for an opponent like China, which remains inferior to the United States on the nuclear front. In most cases, any type of denial campaign should be implemented during the initial stages of a conflict. Simply put, the longer the United States waits to intervene in support of an exposed ally, the greater the risk it will find itself attempting to reverse aggression rather than trying to thwart an assault. Moreover, a version of denial that entails destroying so many forces in such short order could put an even greater premium on conducting attacks quickly. Achieving this difficult aim would almost certainly be easier the earlier it was

attempted, before ships, submarines, tanks, and other targets have taken precautions to reduce their vulnerability.

Yet it is not difficult to envision scenarios in which a U.S. president would be reluctant to sanction the immediate use of force, let alone commit to a course of action that would inflict enormous losses on an opponent from the outset. This might be due to domestic politics, alliance dynamics, or doubts about the veracity of indications and warnings if opponents attempt to mask their preparations with large-scale exercises or other methods of deception. Whatever the reason, an expectation of reticence would come at the expense of credibility.

Second, the goal of rapid attrition might set an untenably high bar for the capabilities needed to execute a threat. If this requires employing force at speed as well as at scale, a significant portion of U.S. surveillance, strike, and logistical support assets would probably need to remain at a high level of readiness, both to provide early warning of an impending attack and to launch a response as soon as possible. Not only would preserving this force-in-being be financially taxing, potentially drawing resources away from other investment areas such as modernization, but it could also create openings that adversaries might exploit.

China, in particular, has proved adept at wearing down opponents through peacetime cost imposition. For instance, dispatching ships and scrambling fighters each time Beijing sends coast guard vessels into Japan's territorial waters or conducts air patrols near its southwest islands has taken a heavy toll on Tokyo's platforms and personnel. It would not be surprising, therefore, to see Beijing attempt to bait Washington in a similar fashion. In other words, raise and lower tensions just enough, and just often enough, that the price tag and political costs of a rapid attrition posture become increasingly burdensome over time. Meanwhile, signals of an actual assault might become lost in the noise of frequent provocations.

Third, rapid attrition could simply become less relevant. Because this objective is geared mainly toward blunting a major amphibious or ground assault, it highlights a fundamental tradeoff between the operational focus needed for military innovation and the strategic flexibility required to keep the international status quo intact. Organizations might benefit from tackling clear problems when it comes to devising new ways of warfare, but revisionist powers often have many options for aggression. Depending on the contingency, for instance, China could choose to launch an invasion, implement economic strangulation, engage in missile coercion, or some combination of the three, not to mention the various "hybrid" uses of force it might pursue.

Closing off one of those options, especially the most serious option, would be an achievement. Yet it could also drive a dynamic adversary to explore substitutes as it seeks to "design around" U.S. conventional deterrence, leaving Washington the victim of its own success. As Alexander George and Richard Smoke cautioned many years ago, "The defender's strategy must be made relevant to the range of alternative options possibly available to the initiator." Otherwise, a determined revisionist could exploit "loopholes, weaknesses, or uncertainties" to achieve its aims.

#### Designing New Approaches to Denial

None of this means that the Pentagon should completely forgo the recommendations of Work, Flournoy, and others who share their views. There is a clear rationale for denial in regions characterized by contested frontiers and U.S. security commitments. There is also a compelling demand for new operational concepts to prevent hostile actors from dominating those regions as military balances shift in dangerous ways. And there is a corresponding need to overcome organizational barriers to adaptation and innovation, which can keep those concepts out of reach.

These considerations should not obscure the risks that stem from focusing on narrow operational problems and prescribing rapid attrition as the solution to them — risks that could increase the

danger of deterrence failure via a perceived lack of will, an imposed lack of endurance, or an eventual lack of relevance. A defense strategy that addresses pressing operational problems but leaves policymakers with an all-or-nothing decision, is too costly to keep up, or becomes less applicable if opponents play by a different set of rules could, in the end, do as much harm as good.

Ideally, then, efforts to devise new versions of denial should pursue solutions that are scalable enough to give policymakers flexibility when tensions are high. This could entail, for example, collaborating even more closely with allies and partners to improve their resilience and ensure the United States has the option of graduated escalation in the event of a conflict, rather than being painted into the corner of rapid attrition as those allies or partners quickly approach the point of defeat. These efforts should also prioritize solutions that are sustainable over time. That, in turn, could involve placing greater emphasis on forward defense over expeditionary reinforcement so that the United States is better poised for day-to-day denial, rather than rushing to protect allies and partners from thousands of miles away. Lastly, and perhaps most importantly, these efforts should emphasize approaches that are fungible enough to enhance deterrence across a range of scenarios. That means avoiding point solutions that cannot easily be adapted to address alternative forms of aggression.

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<https://warontherocks.com/2020/09/kill-em-all-denial-strategies-defense-planning-and-deterrence-failure/>

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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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