



UNITED STATES AIR FORCE
CENTER FOR STRATEGIC
DETERRENCE STUDIES

NEWS AND ANALYSIS

Issue 1427
24 July 2020

Feature Report

“Emerging Military Technologies: Background and Issues for Congress”. Published by Congressional Research Service; Updated July 17, 2020

<https://crsreports.congress.gov/product/pdf/R/R46458>

Members of Congress and Pentagon officials are increasingly focused on developing emerging military technologies to enhance U.S. national security and keep pace with U.S. competitors. The U.S. military has long relied upon technological superiority to ensure its dominance in conflict and to underwrite U.S. national security. In recent years, however, technology has both rapidly evolved and rapidly proliferated—largely as a result of advances in the commercial sector. As former Secretary of Defense Chuck Hagel observed, this development has threatened to erode the United States’ traditional sources of military advantage. The Department of Defense (DOD) has undertaken a number of initiatives to arrest this trend. For example, in 2014, DOD announced the Third Offset Strategy, an effort to exploit emerging technologies for military and security purposes as well as associated strategies, tactics, and concepts of operation. In support of this strategy, DOD established a number of organizations focused on defense innovation, including the Defense Innovation Unit and the Defense Wargaming Alignment Group.

...

This report provides an overview of selected emerging military technologies in the United States, China, and Russia:

- artificial intelligence,
- lethal autonomous weapons,
- hypersonic weapons,
- directed energy weapons,
- biotechnology, and
- quantum technology.

TABLE OF CONTENTS

NUCLEAR WEAPONS AND DETERRENCE

- [LANL, NNSA Honor 75th Anniversary of Trinity Test](#) (Los Alamos Daily Post)
During her speech, Gordon-Hagerty said she couldn't recapture the "magnificence of the moment" that occurred 75 years ago in Alamogordo.
- [House Passes NDAA, White House Threatens Veto](#) (Space News)
The House bill directs the Pentagon to establish the position of Assistant Secretary of Defense for Space and Strategic Deterrence Policy with responsibility for space, nuclear deterrence and missile defense.
- [Defund Pentagon Effort Holds Message for Biden](#) (Defense News)
Reducing defense spending would undercut the bill's deterrent effect on Russia and China, which have increased their own defense budgets, said Senate Armed Services Committee Chairman Jim Inhofe, R-Okla.

US COUNTER-WMD

- [Commander Wants Aegis Ashore Funding to Defend Guam](#) (National Defense)
The year 2026 is when Davidson believes adversaries will be advanced enough to defeat current missile defense systems in place.
- [Expect More Wargames, Attention & Allies in the Arctic, Say Air and Space Force Chiefs](#) (Defense One)
A shot over the Arctic is a much more direct route to the United States for Russia, China, or North Korea.

US ARMS CONTROL

- [The Air Force Cancels its Open Skies Recapitalization Program after US Pulls out from Treaty](#) (Defense News)
The treaty permits its 34 signatory nations to conduct unarmed reconnaissance flights over the territory of other member-states for the purposes of monitoring military activity and controlling nuclear arms.
- [What are the Alternatives to the Iran Nuclear Deal?](#) (Atlantic Council)
If a new agreement cannot be reconstituted in accordance with principles outlined by the Trump administration, the [U.S.] and regional powers might increasingly rely on direct action.
- [North Korea Proceeds Down a Nuclear Path](#) (38 North)
While the omission of the word "nuclear" in North Korean coverage of the CMC meeting has led to speculation that the North is softening its position, photographs of the meeting do not support that conclusion.

COMMENTARY

- [China Needs to Play Straight on New START Nuclear Treaty](#) (The Hill)
“China continues to portray itself as a secondary nuclear power, no better than France or Britain, with roughly a fifth the number of warheads in the Russian and American arsenals.”
- [In Defense of ‘WMD’: A War of Words and the Challenge of Swarms](#) (War on the Rocks)
“[WMD] is the only analytical framework useful for assessing whether the risks of drone swarms or any other emerging technology should be addressed the way chemical, biological, and nuclear weapons are.”
- [Nixon and Kissinger](#) (Arms Control Wonk)
“Deterrence requires reassurance to succeed, but the principle form of reassurance, arms control, was in its infancy.”
- [The Risks of Australia’s Solo Deterrence Wager](#) (War on the Rocks)
“It comes as little surprise that Australia, arguably America’s closest ally in the Asia-Pacific, has decided to prepare for a world in which it may not be able to count on the United States to protect it from China.”

NUCLEAR WEAPONS AND DETERRENCE

Sandia National Labs (New Mexico)

LANL, NNSA Honor 75th Anniversary of Trinity Test

By Kirsten Laskey

July 17, 2020

To mark the 75th anniversary of the testing of the nuclear bomb, known as the Trinity test, Los Alamos National Laboratory (LANL) officials along with representatives from the National Nuclear Security Administration (NNSA) gathered at V-Site located in the LANL campus Thursday afternoon to honor the milestone that led to the end of World War II.

V-Site was a fitting venue. Before the “Gadget” or the prototype of the nuclear bomb “Little Boy,” exploded in the Alamogordo desert July 16, 1945, it was pre-assembled and had some early testing done at V-Site.

LANL Director Thom Mason and U.S. Under Secretary of Energy for NNSA Lisa Gordon-Hagerty spoke during the event, which was also attended by U.S. Rep. Ben Ray Lujan, although he did not make a presentation.

Mason described what happened in the Alamogordo desert as “momentous” for not only Los Alamos but for the U.S. and the world.

It “achieved a scientific feat that really changed world,” Mason said.

While only a few individuals were admitted into V-Site due to COVID-19, Mason said the public could participate in honoring and recognizing the enormous scientific milestone that occurred 75 years ago by visiting www.lanl.gov. The website features testimonies, videos, articles and photographs of the Trinity test.

“Everyone can participate in the recognition because it is online,” he said.

During her speech, Gordon-Hagerty said she couldn’t recapture the “magnificence of the moment” that occurred 75 years ago in Alamogordo.

However, to give participants a picture of this moment in history, the Bradbury Science Museum as well as the LANL Research Center provided artifacts from the Manhattan Project area to be displayed for the event. These included J. Robert Oppenheimer’s desk chair, drawings of the nuclear bombs’ designs and even a life-size model of the nuclear bomb known as “Fat Man”.

“Hopefully they provide you with a sense of connectivity to the past,” Gordon-Hagerty said of the artifacts. “While I stand here today speaking about an event that occurred 75 years ago, and perhaps seemingly neglect so many of the incredible achievements of Los Alamos and the rest of our nuclear security enterprise this afternoon, I do not hesitate for a moment to acknowledge that every single person, no matter their position, contributed to the end of WW2 and those serving our great nation to this day, deserve special recognition for keeping us safe and secure which is why we are the land of the free and home of the brave.”

“Los Alamos has applied its expertise in nuclear sciences in other important ways well-outside national security,” Gordon-Hagerty said. “Millions of people are affected by illnesses such as heart disease and cancer, whether directly themselves, or indirectly by the shattering consequences upon loved ones. Let us make it our goal to keep the world safe for the next 75 years by fully using the tools from the past, present and those we have yet to dream of.”

<https://ladailypost.com/lanl-nnsa-honor-75th-anniversary-of-trinity-test/>

[Return to top](#)

Space News (Alexandria, Va.)

House Passes NDAA, White House Threatens Veto

By Sandra Erwin

July 21, 2020

WASHINGTON — The House of Representatives on July 21 passed the National Defense Authorization Act for Fiscal Year 2021 by a vote of 295 to 125.

Rep. Adam Smith (D-Wash.), chairman of the House Armed Services Committee, said this marked the 60th consecutive year the House has passed the NDAA. The Senate is scheduled to vote on its version of the NDAA later this week.

Several late amendments related to the Space Force and U.S. space policy made it into the bill.

- Rep. Salud Carbajal (D-Calif.) proposed giving the Space Development Agency special hiring authority to attract experts in science and engineering.
- Rep. Dan Crenshaw (R-Texas) recommended the Space Force use the same system and rank structure as the Navy.
- Rep. Charlie Crist (D-Fla.) asked for a report on the effects of COVID-19 on the space industrial base and DoD space programs.
- Rep. Jason Crow (D-Colo.) added a requirement that the DoD space strategy include assessments of Iran and North Korea, and adds the Director of National Intelligence as a senior official who should participate in the development of the strategy.
- Rep. Doug Lamborn (R-Colo.) asks for a DoD report on the “processes and procedures for identifying and securing frequency licenses for national security space ground assets.”

White House issues veto threat

The White House said President Trump will veto the NDAA over policy differences with the House version of the bill.

In a statement of administration policy issued July 21 by the White House Office of Management and Budget, the administration said the president’s main objection to the bill is language that would require the Pentagon to change the names of military bases named for Confederate military leaders.

The White House also objects to two space policy provisions from the House version of the NDAA.

The House bill directs the Pentagon to establish the position of Assistant Secretary of Defense for Space and Strategic Deterrence Policy with responsibility for space, nuclear deterrence and missile defense. The committee said the realignment of nuclear deterrence, missile defense, and space policy under one assistant secretary would “streamline” the development of policies and acquisitions of new systems.

The administration “strongly objects to adding nuclear deterrence and missile defense responsibilities to the responsibilities of the Assistant Secretary of Defense for Space Policy,” the White House said.

Another provision passed by the House would give the Missile Defense Agency sole responsibility for the development of a sensor network to detect hypersonic missiles. The Pentagon wants that task to be shared with the Space Development Agency.

The Trump administration said it “agrees with the need to mature space-based sensing capabilities that could provide value for missile defense.” However it “objects to the requirement that the MDA be solely responsible for the development of the hypersonic and ballistic tracking space sensor payload because it would fragment space capabilities across multiple agencies.”

<https://spacenews.com/house-passes-ndaa-white-house-threatens-veto/>

[Return to top](#)

Defense News (Washington, D.C.)

Defund Pentagon Effort Holds Message for Biden

By Joe Gould

July 21, 2020

WASHINGTON — Legislation from progressive Democrats to slash authorized defense spending by 10 percent is expected to fail in the Senate this week, with uncertain prospects in the House. But their hope is to advance an internal debate over defense spending, should Democrats take back the White House or the upper chamber.

Sen. Bernie Sanders, I-Vt., and House Progressive Caucus co-chair Mark Pocan, D-Wis., are offering amendments that would cut each chamber’s \$740.5 billion FY21 National Defense Authorization Act by about \$74 billion. In recent days, advocates published multiple op-eds in support, and on Sunday the Congressional Progressive Caucus announced the cut as its official position.

Republicans, who hold a majority in the Senate, are, for the most part, fighting the amendments in both chambers. Reducing defense spending would undercut the bill’s deterrent effect on Russia and China, which have increased their own defense budgets, said Senate Armed Services Committee Chairman Jim Inhofe, R-Okla.

“If we cut our defense budget now, we play right into their hands,” Inhofe said in a recent op-ed in the conservative Daily Signal.

With Americans grappling personally with the effects of the coronavirus on their daily lives, Democrats argue that cutting the defense budget to fund domestic needs has become a mainstream policy. (The Sanders amendment would divert defense dollars to a domestic federal grant program to fund health care, housing, childcare and educational opportunities for cities and towns experiencing a poverty rate of 25 percent or more.)

On Monday, Pocan announced new polling from the progressive think tank Data for Progress showing that, by a 2-to-1 margin, people support a 10 percent cut in the defense budget. Fifty-seven percent of those polled support the idea and only 25 percent oppose.

“The polling is abundantly clear: the American people know that new nukes, cruise missiles, or F-35s won’t help them get their next unemployment check, or pay next month’s rent, or put food on their family’s table, or pay for the costs of healthcare in a global pandemic,” Pocan said in his announcement.

Separately, Pocan told The Intercept he saw the amendments as part of “an organizing campaign around the size of the defense budget, adding: “Next year may be the best chance, with a

Democratic president and maybe a Democratic Senate, so we really are going to do everything we can this time.”

Progressives have swayed at least one important Democrat already. Senate Minority Leader Chuck Schumer, D-N.Y., has voted for every Pentagon budget increase of the Trump administration, but he announced his support for Sanders’ amendment when it comes to the floor this week.

Sanders, the top Democrat on the Senate Budget Committee, has long championed cuts for the military, but he believes the argument has new resonance now, said Sanders foreign policy aide, Matt Duss. After quickly allocating \$5 trillion to respond to the coronavirus and its economic damage, Congress and the White House have been working for weeks on a new tranche of aid.

“Especially in this moment when a lot of Americans are out of work, they’re struggling, the idea that the U.S. Congress can send another quarter of a trillion dollars to the Pentagon without battling an eye—while not being able to get them more relief—that’s pretty stark,” Duss said Monday. “I think that’s something the pandemic has made very immediate and understandable to a lot of Americans in a way that it might not have been previously.”

Beyond congressional Democrats, Duss acknowledged that strong votes this week, even if the amendments fail, could send a message to former Vice President Joe Biden, who’s running for president. Biden has reportedly been under pressure from left-leaning groups to slash defense spending, if elected, with mixed results.

“What it says to Joe Biden is there is a substantial lobby within your own coalition that says we have to reset priorities,” said Gordon Adams, who led defense budgeting under the Clinton administration. “We know we have a public health crisis that’s been inadequately managed, and it’s going to lead to changes in the healthcare system.”

Should Biden win, he would have his best window early in his administration, before federal agencies are fully staffed, to aggressively pursue Democratic budget priorities, according to Adams. “That first year is crucial because they have to submit their own budget, there isn’t an outgoing budget that’s been submitted,” Adams said.

Jim Manley, who was Democratic Senate Majority Leader Harry Reid’s senior communications adviser, said it seems likely Democrats will have a significant debate over spending priorities next year, especially if the Senate flips and Sanders becomes chairman of the Budget Committee. But the size of the votes this week will be what determines how much pressure a President Biden would be under.

“We will see how the votes go, but I am not sure that this is where a majority of House and Senate Democrats are,” Manley said. “It’s interesting that Sen. Schumer has sided with the progressives here but I don’t think that anyone should be under the illusion that he is going to whip his caucus or do much of anything to get Senate Democrats on board.”

Whatever the strategic goals, Republicans are arguing the amendments make for abysmal policymaking. In the House floor debate over the Pocan amendment Monday, several likened it to sequestration budget cuts.

House Armed Services Committee Republicans on Monday released a statement arguing the cuts, among other reductions, would sap funding from operations, maintenance, training, military construction accounts, military housing and education for military dependents. To boot, research and development would lose \$17 billion.

“This amendment is a deeply irresponsible stunt that would have great implications for our national security,” said HASC member Rep. Liz Cheney, R-Wyo. “We would, with this amendment, undermine the readiness of our troops on air, on land and at sea.”

<https://www.defensenews.com/space/2020/03/24/a-new-training-system-for-the-air-forces-airborne-icbm-command-post-is-coming-soon/>

[Return to top](#)

US COUNTER-WMD

National Defense (Arlington, Va.)

Commander Wants Aegis Ashore Funding to Defend Guam

By Mandy Mayfield

July 21, 2020

U.S. Indo-Pacific Command needs funding to update its missile defense system in Guam by fiscal year 2021, the head of the combatant command said July 21.

“I will say that my number one priority and the most important action we can take to rapidly and fully implement the National Defense Strategy as a first step is a 360-degree persistent and integrated air-defense capability in Guam. What I call the Homeland Defense System Guam,” Adm. Phil Davidson, head of U.S. Indo-Pacific Command said during a call with the media.

Funding the capability — the backbone of which will be the Baseline 10 Aegis Ashore system — must begin in fiscal year 2021 if it is to be in place by 2026, he said.

The year 2026 is when Davidson believes adversaries will be advanced enough to defeat current missile defense systems in place. The combatant command currently uses the Terminal High Altitude Area Defense, an anti-ballistic missile defense system built by Lockheed Martin.

“When you look at the way the threat capability — threat capacity — is manifesting from China in the future, whether it's ballistic missiles from the land, or whether it's ballistic or cruise missiles from air and maritime platforms, you are going to need a complete clock — a 360-degree coverage — in order to help defend Guam,” he said.

Further, the Aegis Ashore system will enable the combatant command to integrate other shorter-range defenses and other capability sets that will be necessary in the future.

Davidson asked for \$5.2 billion over a five-year period from fiscal years 2021- 2026 for the system, according to a proposal he delivered to Congress in April.

The system is critical for defending the Defense Department’s “most important operating location in the Western Pacific,” said the proposal, which was first reported by Breaking Defense. “In the future, this system will provide the opportunity to provide long-range precision strike capability into the First Island Chain.”

The Aegis Ashore system — built by Lockheed Martin and derived from the ship-based system — has been fielded in Romania. Plans to deploy a system in Poland has suffered several delays.

<https://www.nationaldefensemagazine.org/articles/2020/7/21/commander-asks-for-guam-aegis-ashore-funding>

[Return to top](#)

Defense One (Washington, D.C.)

Expect More Wargames, Attention & Allies in the Arctic, Say Air and Space Force Chiefs

By Patrick Tucker

July 21, 2020

For future U.S. Space Force operations, the Arctic will be “key terrain” according to Gen. John Raymond, chief of space operations. It’s also an area where the United States is especially reliant on NATO allies and partners. That means Americans should expect an increase in international military exercises and more spending on interoperable electronic communications, Raymond and Air Force leaders said today, as they revealed the Pentagon’s new Air Force Arctic Strategy for their service branches.

Space Force and the Air Force fall under the Department of the Air Force (much like the Department of the Navy governs the U.S. Navy and Marine Corps.) On Tuesday, Air Force and Space Force leaders highlighted the sensitive importance of the Arctic to U.S. missile defense and satellite operations. The United States operates 50 early warning radars and missile defense radars in the Arctic. Just below the Arctic Circle, at Alaska’s Fort Greely, are 40 ground-based midcourse defense interceptors that are meant to shoot down incoming intercontinental ballistic missiles. A shot over the Arctic is a much more direct route to the United States for Russia, China, or North Korea.

But the Arctic is also a key post for managing satellites, according to Raymond. “If you’re going to command and control satellites that are in polar orbits, where better to do that than on top of the world at the pole,” he said. “The geography and position on the globe makes it an extremely advantageous place to operate from,” even if the Arctic does present what the strategy document describes as ‘arctic-unique orbital mechanics and electro-magnetic obstacles’ that the Air Force must overcome. Read that to mean a lot of physics phenomena that don’t happen elsewhere on earth.

The Arctic is also becoming more congested as changing temperatures make parts of it more accessible — especially for Russia. Russia has always been a heavy player in the region and derives 25 percent of its GDP from Arctic activities according to the strategy. “Russia’s recent Arctic initiatives include refurbishing airfields and infrastructure, creating new bases, and developing an integrated network of air defense, coastal missile systems, and early warning radars to secure its northern approaches. Further, Russia seeks to regulate maritime traffic on the Northern Sea Route in ways that may exceed its authority permitted under international law,” notes the strategy.

Air Force Chief of Staff Gen. David Goldfein said that the Air Force will be exercising more actively in the region, pointing to four red-flag exercises that the service runs on a yearly basis as well as last year’s Arctic Challenge, which, he said, saw 140 different aircraft from nine nations and 4,000 participants.

“I do see an increase in activity relative to building on this strategy to ensure airmen are prepared to go anywhere, globally, as an expeditionary force,” he said. “What I tell them: I don’t know exactly when I am going to ask you, squadron commander, to pick up, pack up, and deploy forward to either 120 degrees plus, or 50 degrees minus. I just know we have to get you ready.”

Increased Air Force traffic to the region also means more use of the Air Force’s LC-130s, which are essentially a C-130 cargo plane with skis, Goldfein said.

The biggest area of investment for the Air Force in future arctic operations is not cold-weather specific, it’s improved networking between different parts of the Air Force and between the United States and its allies — an area Goldfein has spent years spearheading. The Defense Department is “focusing on the integration of capabilities, missile warning, space capabilities, air capabilities...

how you marry up 5th generation [aircraft] with 4th generation [aircraft.] It's more the case as we look to the future of warfare that data will be the currency that we operate on.... Perhaps most importantly in this region, it's sharing data with allies and partners," he said.

Among the Arctic states, Canada, Denmark (which owns Greenland), Iceland, and Norway, are NATO allies, and two others, Finland and Sweden, are NATO Enhanced Opportunities Partners.

The strategy describes the need to increase training with regional partners and establish new forums with allies to discuss Arctic issues, but does not specify if the United States wants NATO or any other international organization to take that lead role, as some are advocating "Building these relationships counters influence from adversaries, whose actions are not aligned with U.S. interests, and bolsters U.S. national security," it reads. "The Department of the Air Force must work to highlight shared goals, ensuring a peaceful and stable region where international norms and standards are upheld. To strengthen collaborative international security relationships."

The Air Force is "focused on this integration of capabilities," Goldfein said, "...how we build the networks we can operate seamlessly on is where you are going to see most of our investment."

The Air Force is "focused on this integration of capabilities," Goldfein said, "...how we build the networks we can operate seamlessly on is where you are going to see most of our investment."

Patrick Tucker is technology editor for Defense One. He's also the author of *The Naked Future: What Happens in a World That Anticipates Your Every Move?* (Current, 2014). Previously, Tucker was deputy editor for *The Futurist* for nine years. Tucker has written about emerging technology in *Slate*, ...

<https://www.defenseone.com/politics/2020/07/expect-more-wargames-attention-allies-arctic-say-air-and-space-force-chiefs/167091/>

[Return to top](#)

US ARMS CONTROL

Defense News (Washington, D.C.)

The Air Force Cancels its Open Skies Recapitalization Program after US Pulls out from Treaty

By Valerie Insinna

July 17, 2020

WASHINGTON — The U.S. Air Force on July 14 officially rescinded its solicitation to overhaul the OC-135 Open Skies aircraft, cancelling the program two months after President Donald Trump announced the United States' withdrawal from the Open Skies treaty.

"On 22 May 2020, the United States provided formal notice of its intent to withdraw from the Treaty on Open Skies. As a result, this announcement is hereby cancelled," the Air Force wrote in a statement on beta.sam.gov.

The Open Skies Treaty permits its 34 signatory nations to conduct unarmed reconnaissance flights over the territory of other member-states for the purposes of monitoring military activity and controlling nuclear arms. The U.S. has relied upon two Boeing OC-135B aircraft flown by the 45th Reconnaissance Squadron out of Offutt Air Force Base, Neb., to carry out Open Skies missions since 1993.

As the aging OC-135s become increasingly difficult to maintain, the Air Force had planned to modify two modern business jets with a digital sensor, processing and control suite that would replace the wet-film cameras currently in use.

But although the service received \$125 million from Congress in fiscal year 2019 for the first replacement aircraft and continued to survey industry about recapitalization options, it never moved past the request for information stage, with the final solicitation posed in December 2019.

In March, Defense Secretary Mark Esper told the Senate Armed Services Committee that recapitalization efforts were stalled as the Pentagon waited for instructions from the White House on how to proceed.

“At this point and time, until we make a final decision on the path forward, I’m not prepared to recapitalize aircraft,” Esper said. “We’re holding until we get better direction.”

Although the OC-135B replacement program may be canceled for now, the United States’ withdrawal from the Open Skies treaty is by no means a done deal. Secretary of State Mike Pompeo said in a statement on May 21, that the US would “reconsider our withdrawal should Russia return to full compliance with the Treaty.”

The United States also has a six-month window before a formal exit occurs in November — after the presidential election. Democratic presidential nominee Joe Biden has voiced support for remaining in the treaty, and if elected, could reverse plans to pull out.

Aaron Mehta and Joe Gould in Washington contributed to this report.

<https://www.defensenews.com/air/2020/07/16/the-air-force-cancels-its-open-skies-recapitalization-program-after-us-pulls-out-from-treaty/>

[Return to top](#)

Atlantic Council (Washington, D.C.)

What are the Alternatives to the Iran Nuclear Deal?

By Kenneth Katzman

July 22, 2020

The 2015 multilateral Iran nuclear agreement has largely lost its ability to contain Iran’s nuclear program. The United States exited the agreement in 2018 and re-imposed all US sanctions on Iran, thwarting efforts by the remaining parties to the accord—France, United Kingdom, Germany, Russia, and China—to persuade Iran to continue to adhere to the Joint Comprehensive Plan of Action (JCPOA) limitations on its nuclear activities. If a new agreement cannot be reconstituted in accordance with principles outlined by the Trump administration, the United States and regional powers might increasingly rely on direct action to constrain Iranian nuclear capabilities. Yet, military or other direct action against Iran’s facilities will likely have only fleeting effect, as compared to the benefits of a lasting Iran nuclear agreement.

The several explosions that have occurred in Iran since June, and particularly the July 2 explosion at Iran’s main uranium enrichment facility at Natanz, in central Iran, have raised the question whether the United States and its allies have begun to shift strategy against Iran and its nuclear program. Since mid-2019, as a response to the Trump administration’s 2018 withdrawal from the JCPOA and re-imposition of all sanctions, Iran has undertaken significant, although reversible, violations of the accord. The breaches have reduced Iran’s “breakout time”—the time thought needed to make enough fissile material for one nuclear weapon to about four months—from one year if there were

full adherence to the JCPOA restrictions. The building at Natanz that suffered the explosion, and which commercial photographs show was severely damaged, is reported to be a site for the production of advanced centrifuges (devices used to enrich uranium). The JCPOA permits Tehran to research and develop, but not install, new centrifuges that can enrich many times faster than those that Iran is allowed to run. Were Tehran to begin installing and using the advanced centrifuges, Iran's breakout time could shrink to the point where a nuclear-armed Iran appears imminent.

By imposing progressively stricter sanctions as part of a "maximum pressure" campaign, President Donald Trump has sought to compel Iran to agree to a revised deal that imposes even stricter limits on Iran's nuclear program and places restrictions on other issues of US concern. Tehran has refused thus far to negotiate, insisting that the United States must first return to the JCPOA and lift all sanctions. As Iran's adherence to the JCPOA declines, and the prospects for Tehran to negotiate a revised JCPOA appear remote, the United States and its regional partners—particularly Israel—might be considering alternatives to mitigate the potential nuclear threat from Iran.

There are indications that the United States and/or Israel might have already begun to adjust strategy on Iran's nuclear program from reliance on the JCPOA to undertaking direct action to try to destroy Iran's nuclear infrastructure. Although there is no direct evidence that the July 2 Natanz explosion was caused by a deliberate attack, a report in the Washington Post, quoting a "Middle East security official," said that an explosive device was planted at the facility to "send a signal" to Tehran. Israel's Defense Minister Benny Gantz said his country was not "necessarily" behind every explosion in Iran, a formulation that suggested to some the explosion was an Israeli operation. Israel, if it was behind the attack, might have used agents inside Iran to strike the facility, a tactic that Israel has previously demonstrated. In 2018, Israeli Mossad agents infiltrated a warehouse in Tehran and retrieved documents about Iran's earlier efforts to develop a nuclear explosive device. Israel's Prime Minister Benjamin Netanyahu provided the documents to the International Atomic Energy Agency (IAEA) for further follow-up work in Iran and asserted that the discovery backs up his assertion that Tehran was continuing to research a nuclear explosive device, despite its JCPOA and Nuclear Non-Proliferation Treaty (NPT) commitments. In 2010, the United States and Israel jointly developed and employed the "Stuxnet" computer worm to destroy 80 percent of the centrifuges that Iran was then operating at Natanz.

The putative Israeli action against Natanz revives the longstanding debate over the optimum strategy to prevent Iran from eventually developing a nuclear weapons capability—a debate that preceded the US decision to negotiate the JCPOA with Iran. Although some Israeli security experts estimated that the destruction of the Natanz facility might set back Iran's nuclear program by as much as two years, most proliferation experts assess any damage as transitory and marginal, at best. The damage caused by the Stuxnet cyberattack set back Iran briefly, and likely contributed to Tehran's decision to develop countervailing cyber-attack capabilities.

Iran's apparent ability to reconstitute damage to its facilities and equipment from any attack was a key consideration in the Barack Obama administration's conclusion that a diplomatic accord with Tehran was the only way to assure US objectives over the longer term. The Obama administration assessed that even a significant US bombing campaign would only set Iran's nuclear program back by a maximum of a few years. The difficulty of achieving success through military action was a factor in Israel's decisions during 2010-2012 to refrain from a major airstrike on Iran's nuclear infrastructure.

The Trump administration faces similar questions in 2020. The maximum pressure campaign has damaged Iran economically but not brought Tehran to the bargaining table. Trump faces a choice between accommodating some of Iran's preconditions for talks or adding direct military or covert action against Iran to the US policy formula. The explosion at Natanz might demonstrate that the

Trump administration—in this case acting through a like-minded partner, Israel—might have made that choice in favor of direct action. If so, the assessment of experts that action against Iran’s facilities will have only transient effect—as compared to the effects of diplomatic agreement with Iran—will be put to the test.

Dr. Kenneth Katzman is Iran expert at the Congressional Research Service. He is writing in a personal capacity.

<https://www.atlanticcouncil.org/blogs/iransource/what-are-the-alternatives-to-the-iran-nuclear-deal/>

[Return to top](#)

38 North (Washington, D.C.)

North Korea Proceeds Down a Nuclear Path

By 38 North

July 20, 2020

Reports about the unusual “closed-door meeting” of the Workers’ Party of Korea Central Military Commission (CMC)[1] on July 18 suggested that North Korea remains committed to its strategic weapons development and production plan, including its nuclear weapons. This meeting builds on recent statements by North Korean officials implying that Pyongyang will proceed with its strategic weapons plans and that the moratorium on nuclear weapons and long-range ballistic missile testing is off the table.

While the omission of the word “nuclear” in North Korean coverage of the CMC meeting has led to speculation that the North is softening its position, photographs of the meeting do not support that conclusion. In fact, they make clear that the nuclear program is still a centerpiece of the North’s policy.

“Nuclear War Deterrent” vs. “War Deterrent”: Significant?

The CMC meeting echoed wording from the June preliminary meeting, calling for the strengthening of the country’s “war deterrent.”[2] By contrast, reports of the May CMC meeting had referred to the need for further increasing “nuclear war deterrence.”[3]

North Korea may have omitted “nuclear” to dial down the tone of recent messaging, but it does not necessarily translate into actual policy implications. For instance, North Korean state media used “war deterrent” and “nuclear war deterrent” interchangeably during the years that byungjin was the official state policy (2013-2018), when Pyongyang’s openly stated goal was to simultaneously build nuclear forces and develop the economy.[4]

If North Korea’s intention was to modulate the tone of the text by leaving out the word “nuclear,” it made its intent clearer through the photos. By deliberately releasing photos of the CMC’s “closed-door meeting” in which nuclear weapons specialists were present, and even shown speaking, Pyongyang was signaling that its nuclear program remains central to its policy.

Two key figures appearing in the photos were Hong Sung Mu, vice director of the party’s Munitions Industry Department, and Ri Hong Sop, director of the Nuclear Weapons Institute and formerly the head of the Yongbyon Atomic Energy Research Institute. Hong and Ri are widely known as North Korea’s top nuclear weapons developers. Both were prominently shown in photographs with Kim Jong Un at nuclear weapons-related events in 2017, including Kim’s guidance of “the work for nuclear weaponization” that September.[5]

Hong Sung Mu stands up to listen to Kim Jong Un during a closed-door meeting of the CMC (KCNA, July 19, 2020). Pyongyang television footage of the meeting also showed Hong talking to Kim. Seated at the head of the table's left side is Pak Jong Chon, chief of the Korean People's Army (KPA) General Staff and former director of the KPA Artillery Department; seated at the head of the table's right side is Ri Pyong Chol, director of the party's Munitions Industry Department.

Seated on the side of the room, away from the main table, are, from left to right: Jo Yong Won, first vice director of the party's Organization and Guidance Department; Hong Sung Mu, vice director of the party's Munitions Industry Department; unidentifiable; and Ri Hong Sop, director of the Nuclear Weapons Institute (KCNA, July 19, 2020).

In the Context of Recent Statements

This nuanced treatment of nuclear weapons in CMC meeting coverage is consistent with recent statements by North Korean officials, which indicated denuclearization is off the table for now and North Korea will proceed with its weapons development to cope with US "long-term threats."

In a press statement marking the second anniversary of the US-DPRK Singapore summit, for instance, Foreign Minister Ri Son Gwon explained that denuclearization may be a US goal but is not North Korea's. He said, "Our Republic's unchanging strategic goal is to build a more solid force to manage the long-term military threats of the United States." [6] Underlining the point, Ri's statement echoed the language of the May CMC meeting, even revealing that the CMC had "discussed the national strategy for nuclear development." [7]

On July 4, First Vice Foreign Minister Choe Son Hui said, "We have already formulated a more concrete strategic calculating table to manage long-term US threats. Our national policy will never be adjusted or changed depending on external variables like somebody's domestic political schedule." [8]

While Kim Yo Jong's July 10 press statement seemed more conciliatory in tone than the previous Foreign Ministry statements, the bottom line was consistent with North Korea's position since the Stockholm talks in October 2019: there will be no denuclearization talks until the US withdraws its "hostile policy." [9] Kim added that North Korea must plan for "long-term threats" from the US and "strengthen and steadily increase our practical capabilities," which implied going ahead with North Korea's weapons development and production plan.

[1] The CMC is the highest-level military decision-making body in the party. Under Kim Jong Un, the CMC is reported to have held 13 meetings, four of them since December 2019.

[2] "Supreme Leader Kim Jong Un Guides Enlarged Meeting of WPK Central Military Commission," KCNA, July 19, 2020; and "Preliminary Meeting for 5th Meeting of 7th WPK Central Military Commission Held," KCNA, June 24, 2020.

[3] "Supreme Leader Kim Jong Un Guides Enlarged Meeting of WPK Central Military Commission," KCNA, May 24, 2020.

[4] "DPRK Will Bolster Up War Deterrent: Spokesman," KCNA, March 28, 2014; "U.S. and S. Korean Authorities Warned against Reckless Saber-rattling," KCNA, March 10, 2015; "DPRK Foreign Ministry Spokesman Hits out at UNSC's Partiality" KCNA, April 26, 2017; "Kim Jong Un Guides Second Test-fire of ICBM Hwasong-14," DPRK Foreign Ministry website, July 29, 2017; and "DPRK Warns U.S. to Wake up from Foolish Dream of Doing Any Harm to DPRK: FM Spokesman," DPRK Foreign Ministry website, July 30, 2017.

[5] "경애하는 최고령도자 김정은동지께서 핵무기병기화사업을 지도하시였다," Rodong Sinmun, p. 1, September 3, 2017.

[6] Translated from “우리가 미국에 보내는 대답은 명백하다-조선민주주의인민공화국 리선권 외무상 담화,” KCNA, June 12, 2020.

[7] “Our Message to U.S. is Clear: Ri Son Gwon, Minister of Foreign Affairs of DPRK,” KCNA, June 12, 2020.

[8] Translated excerpt from “조선민주주의인민공화국 최설희 외무성 제1부상 미국과는 마주앉을 필요가 없다고 강조,” KCNA, July 4, 2020. The KCNA English version of Choe’s press statement reads “timetable” instead of “calculation table.”

[9] “Press Statement by Kim Yo Jong, First Vice Department Director of Central Committee of Workers’ Party of Korea,” KCNA, July 10, 2020.

<https://www.38north.org/2020/07/cmc072020/>

[Return to top](#)

COMMENTARY

The Hill (Washington, D.C.)

China Needs to Play Straight on New START Nuclear Treaty

By Dov S. Zakheim

July 22, 2020

China is increasingly becoming a major stumbling block in the effort to renew or at least extend the New START treaty between the United States and Russia. Time is running out on the negotiations between the two strategic nuclear superpowers; the treaty is set to expire on Feb. 5, 2021.

Washington views China's growing nuclear arsenal with increasing concern and wants Beijing to participate in the New START renewal talks. Yet, China continues to portray itself as a secondary nuclear power, no better than France or Britain, with roughly a fifth the number of warheads in the Russian and American arsenals. It will go no further than to promise that China would gladly participate in an arms reduction exercise if the United States and Russia agree to come down to its own levels, knowing full well that neither country is prepared to do so.

China's posture is disingenuous, to say the least. It appears on track to double, perhaps even triple, the number of its nuclear warheads over the course of the next decade. Indeed, China is acting true to longstanding form. It continues to plead that it is only a developing country, focusing on its per capita Gross Domestic Product rather acknowledging the reality that it constitutes the world's largest economy in terms of Purchasing Power Parity (PPP).

Marshall Billingslea, the Trump administration's New START negotiator, rightly has called out China for its refusal to participate in the New START renewal talks. Though Russia characterized his decision to have an empty chair in place of the Chinese delegation during last month's New START as little more than a stunt, Billingslea actually was making an exceedingly serious point: The strategic nuclear balance of 2020 is simply not that of 1991, when the original START Treaty came into force, or even when New START was ratified in 2010. Whatever its spokesmen and officials may argue, China's strategic nuclear force no longer can be ignored and, unlike those of France and Britain, it is projected to grow dramatically through the 2020s and beyond.

Indeed, even in the 1990s, when by all accounts China's nuclear capability was quite limited, China was not reluctant to brandish its nuclear weapons. Chinese officials would question visiting senior American officials and think-tankers whether they would "trade Los Angeles for Taipei." In one case, the American visitor made it clear that an attack on Los Angeles would mean the end of China. At issue now, in light of China's growing arsenal, is whether such a response would be equally credible in 10 or more years' time.

Under the terms of New START, both the United States and Russia are limited to 1,500 deployed warheads. Many analysts estimate China's arsenal to total just under 300 warheads. Nevertheless, China soon will field the DF-41 intercontinental ballistic missile, which is estimated to carry between three and six multiple independent reentry vehicles. Authoritative unclassified analyses also estimate that China will field at least 18 of those missiles, bringing the total number of warheads to about 350. China is unlikely to limit its forces to that level, however. Lt. Gen. Robert Ashley, director of the Defense Intelligence Agency, stated in May 2019 that China probably would double its nuclear stockpile over the next decade. And there have been calls in China for production of 100 DF-41 missiles with six warheads each, to bring China's total ICBM capability to about 1,000 warheads.

Even if China wishes to expand its nuclear arsenal, there is precedent for its doing so while accepting lower weapons and warhead ceilings than those allocated to the United States and Russia. Japan did exactly that in the 1922 Washington Naval Treaty, when it agreed that the tonnage of its capital ships would total only three-fifths those of the United States and Britain. Japan was a rising power, just as China is today. Indeed, unlike China, Japan already had defeated a major power, Russia, a quarter-century earlier. Moreover, its navy had delivered what was probably the decisive blow in the Russo-Japanese war when it vanquished the Russian navy in the 1905 Battle of Tsushima. Nevertheless, Japan was prepared to accept second-class naval status, at least for the 15-year duration of the treaty.

The Washington treaty did not prevent Japan from refusing to extend it when it expired in 1936. Nevertheless, even then there was a major debate within the Japanese government over the question of renewal, with some senior naval officers arguing in favor of a second naval treaty. In contrast, what is especially a cause for worry today is China's absolute refusal to consider any ceiling on its nuclear forces for any duration, thereby lending credibility to those who argue that, repeated denials notwithstanding, China ultimately seeks strategic nuclear parity with Moscow and Washington.

Recognizing that Russia is far closer to China than is the United States, the Trump administration has turned to Moscow for assistance in bringing China to the negotiating table. That will never happen. Russia and China are close in no small part because of their shared hostility toward Washington. In any event, the appeal to Moscow appears to be nothing more than another example of the administration desperately trying to demonstrate that Vladimir Putin can serve as a trusted go-between. Somewhat to its credit, Russia thus far has not played along with Washington's wishes; were it to do so, it might well be suspected of playing a double game.

Ultimately, China needs to come clean on its own. Its refusal to join America and Russia in serious arms control talks is yet another example of why China has some distance to go before it can be considered a "responsible stakeholder" within the international community.

Dov S. Zakheim is a senior adviser at the Center for Strategic and International Studies and vice chairman of the board for the Foreign Policy Research Institute. He was under secretary of Defense (comptroller) and chief financial officer for the Department of Defense from 2001 to 2004 and a deputy under secretary of Defense from 1985 to 1987.

<https://thehill.com/opinion/national-security/507211-china-needs-to-play-straight-on-new-start-nuclear-treaty>

[Return to top](#)

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

In Defense of 'WMD': A War of Words and the Challenge of Swarms

By Zachary Kallenborn

July 23, 2020

"It is too late for Saddam Hussein to remain in power. It is not too late for the Iraqi military to act with honor and protect your country by permitting the peaceful entry of coalition forces to eliminate weapons of mass destruction. Our forces will give Iraqi military units clear instructions on actions they can take to avoid being attacked and destroyed."

-President George W. Bush on the eve of the 2003 Iraq War

The decision to invade Iraq was among the most controversial (and arguably worst) foreign policy decisions in modern American history. For many, the term “weapons of mass destruction” is inseparable from the war, motivated or justified as it was by fears that al-Qaeda would acquire Iraq’s weapons of mass destruction (WMD) — the chemical and biological weapons the United States accused Iraq of hiding.

The war also demonstrated the weaknesses of the term “WMD.” Critics argue the term equated the risk of Iraq’s supposed chemical and biological weapons arsenal with far more dangerous nuclear weapons, which Iraq was not accused of possessing. The public and policymakers were more afraid than they otherwise would be. “Weapons of mass destruction” just sounds scary.

While the term has clear flaws, it is still relevant. Getting the terminology right has real-world consequences: the applicability of the term to drone swarms and other future weapon systems has direct consequences for weapons deployment, weapons acquisition, decisions on the use of force, strategic planning, and the character of future battlefields. Alternatives such as “chemical, biological, radiological, and nuclear weapons” (often shortened to “CBRN weapons”) resolve some problems posed by the term weapons of mass destruction. Other alternatives (e.g., “CBRN”; nuclear, biological, and chemical (NBC); and chemical, biological, radiological, nuclear, and explosive (CBRNE) weapons) also worsen other problems and create new ones. Weapons of mass destruction is the only analytical framework useful for assessing whether the risks of drone swarms or any other emerging technology should be addressed the way chemical, biological, and nuclear weapons are.

Why ‘WMD’ Matters

At first blush, debates over terminology look like scholars yelling about navel lint. However, the debate over weapons of mass destruction impacts the real world in significant ways, particularly when it comes to emerging technologies. Chemical, biological, and nuclear weapons are treated differently from conventional weapons across a broad range of policies. A host of bilateral and multilateral treaties have been developed to control their development, export, deployment, and use. At least two, the Outer Space Treaty and Seabed Treaty, restrict the use of weapons of mass destruction without specifically defining what they are. While these treaties might not always constrain use completely, they influence where the weapons can be deployed and the international norms surrounding them. The use of such weapons (or belief that they will be used) also drastically changes public and policymaker support for military intervention, even when the usage is relatively limited in effect or quantity. Emerging drone swarms technology may merit the same policies and consideration.

The framework to limit and control nuclear, chemical, and biological weapons is among the most successful arms control efforts ever, the often-justified criticisms about state commitment to disarmament notwithstanding. While other weapons have drawn international concern, none have generated the same widespread disarmament as weapons of mass destruction. Consider the landmine treaty: 32 states did not sign on, including most of the great powers. Non-signatories include China, Russia, and the United States (though the United States largely adheres to the principle of the treaty). By contrast, the United States, Russia, China, and the rest of the United Nations Security Council have signed onto the Chemical Weapons Convention, the Biological and Toxin Weapons Convention, and the Treaty on the Non-proliferation of Nuclear Weapons. (Of course, in the last case, Security Council members do gain special status as nuclear weapons states). The world’s great powers have also signed on to bilateral arms reduction agreements like the Strategic Arms Limitation Talks and Strategic Arms Reduction Treaties. They also signed multilateral agreements like U.N. Resolution 1540, to combat nuclear, chemical, biological, and

radiological weapon terrorism, and the Outer Space Treaty, which bars the placement of weapons of mass destruction in space.

Of course, a critic may agree with all of the arguments regarding the success of the arms control framework, yet disagree with the term “weapons of mass destruction” itself. Some have argued that the term is vague, that it obfuscates real differences between the different types of weapons, and, as a consequence, policymakers and the broader public incorrectly equate the elements. While a variety of new terms resolve the first concern, they worsen the second, and polling data suggests the third is unfounded. Moreover, alternatives to the term “weapons of mass destruction” introduce a significant new problem: How should a new weapon be handled?

What constitutes mass destruction is inherently vague, and more precise alternatives resolve this issue. Alternatives like CBRN; NBC and CBRNE weapons are not vague at all. Does the weapon use a chemical weapon agent to inflict harm? Then it is clearly one of these agents. No ambiguity. That is a definite value of those alternatives. Keen observers will note I use CBRN frequently in my own writings for that reason. While this lack of ambiguity is a clear advantage, these terms also create other problems.

Chemical, biological, and nuclear weapons have different scales of harm and rely on different physical principles, but “weapons of mass destruction” puts them all together. Alternative terms and categories make the problem worse. Radiological weapons pose little risk of prompt harm and are best thought of as weapons of mass disruption, but they are included in CBRN and CBRNE. Likewise, focusing only on physical properties equates relatively less harmful nonstate actor acid attacks with state-level chemical weapons programs, and city-destroying nuclear weapons. All are concerning, but they are hardly equivalent risks.

Scholars have suggested that congressional and public ignorance of the differences between chemical, biological, and nuclear weapons encouraged the Iraq War (and administration officials may have “systematically misrepresented” these differences). Because the idea of “mass destruction” combines these weapons into a single category, the public equates typically less harmful weapons like chemical and biological weapons with nuclear weapons. Nuclear weapons might justify intervention, but not the less harmful chemical and biological agents. However, subsequent evidence suggests chemical weapons usage alone changes public and policymaker views on military intervention in its favor.

Debate has raged over whether the United States should intervene militarily in the ongoing Syrian civil war. In the early years, most of the public was strongly against intervention, especially after the debacle of the Iraq War. However, in the event Syria used chemical weapons, pollsters found the public’s views reversed. In one 2012 Washington Post poll, only 17 percent of respondents favored military intervention (perhaps due in part to a public fear of repeating the Iraq War). However, if Syria used chemical weapons — and specifically chemical weapons — against its civilians, then support for intervention jumped to 63 percent. If Syria lost control of its stockpile, support jumped again to 70 percent. The Syria conflict also shows that chemical weapons change policymaker views too: Chemical weapons concerns prompted former President Barack Obama to issue his controversial red line on military intervention in 2012. While ultimately Obama did not carry out strikes, President Donald Trump did in 2017 and 2018.

Different ways of describing weapons of mass destruction also introduce a new problem: Under what conditions should these categories be expanded to include new weapons? While these weapons could be subsumed under a category like “unconventional weapons,” that just rewords the problem. When should a new weapon be considered unconventional? No clear rationale exists on what binds the weapons variously referred to as NBC, CBRN, and CBRNE together, except for the strategic goals of policymakers and the weapons’ traditional inclusion as weapons of mass

destruction. That is particularly a challenge when turning to emerging weapon systems like drone swarms.

The Problem of Swarms

In 1946, the United Nations defined weapons of mass destruction as, “atomic explosive weapons, radioactive material weapons, lethal chemical and biological weapons, and any weapons developed in the future which have characteristics comparable in destructive effect to those of the atomic bomb or other weapons mentioned above” [emphasis added]. When taking a broad look at human warfare, little reason exists to believe humans will stop inventing novel ways to kill one another. Likewise, little reason exists to believe at least some of those novel killing methods might merit serious international concern akin to weapons of mass destruction. Armed, fully autonomous drone swarms represent one such possibility, because they are capable of bypassing any arbitrary threshold for “mass destruction” and cannot adequately differentiate between civilian and military targets. For the purposes of this article, “fully autonomous” means self-mobile and self-targeting, and drone swarms are multiple unmanned platforms that communicate with one another to achieve common objectives.

Armed drone swarms can bypass any arbitrary threshold for “mass destruction.” A single swarm could consist of 1,000, 10,000, or potentially even 100,000 drones. Each drone may be armed with small explosives, large missiles, electronic warfare equipment to jam adversary defenses, sensors to identify targets, or even anti-tank weaponry. Of course, whether a particular swarm can inflict mass destruction is a separate issue. As a heuristic, I use the baseline of 1,000 drones each equipped with a single M67 hand grenade’s worth of explosive. However, additional modeling of swarm size, armament, and overall capability is necessary to develop a less arbitrary threshold.

Like the weapons generally classified as weapons of mass destruction, fully autonomous drone swarms are inherently incapable of differentiating between civilian and military targets. An autonomous targeting system must be able to tell a farmer holding a rake from a soldier with a rifle, and a convoy of refugees from a convoy of soldiers. While autonomous target recognition has made tremendous progress, it is still unable to account for these and other battlefield complexities. A soldier might be sick or injured. Smoke, debris, and other obstructions may lead to false positive identifications of civilian targets as military. Traditional chemical warfare agents can cause mass harm, but an errant wind may blow the agent into a civilian area. Likewise, contagious diseases may spread to civilians and aerosolized biological agents such as bacillus anthracis (anthrax) may also blow into unintended areas. And the destructive power of nuclear weapons is so high that major civilian casualties are inevitable: The nuclear attack on Nagasaki killed between 39,000 and over 50,000 people, most of whom were civilians. While drone swarms are unlikely to inflict the truly catastrophic harm of a city-destroying Tsar Bomba, they fit well alongside chemical weapons, some biological weapons, and potentially low-yield nuclear weapons.

The nature of drone swarm technology means mistakes in one drone can create system-wide mistakes. By definition, drone swarms communicate to accomplish shared objectives. Communication can lead to emergent collective behaviors. Typically, this might mean a swarm adjusting its behavior in the event of one member being disabled or destroyed. More dangerously, one drone may incorrectly identify civilian vehicles as military transports and communicate that the vehicles are an acceptable target to the rest of the swarm.

Given these two properties — an ability to cause mass destruction and a lack of ability to differentiate among targets — armed fully autonomous drone swarms are plausibly weapons of mass destruction.

Who Cares?

A skeptic might argue that words are nice, but bullets decide wars. Sure, “WMD” might offer analytical advantages over alternative terms. Sure, a lawyer might classify a drone swarm as a weapon of mass destruction. But what does this matter for the ability to wage and win war?

Weapons Deployment and International Treaties

The Seabed Treaty and the Outer Space Treaty prevent the deployment of weapons of mass destruction on the seabed and outer space without narrowly defining the term to traditional weapons of mass destruction. If armed, fully autonomous drone swarms or any future weapon system are weapons of mass destruction, these treaties apply and those drone swarms could not be used in those domains. Of course, states may elect to abandon or ignore these treaties: Armed, autonomous swarms could be quite useful in space or stationed on the seabed, as they do not require life-sustaining equipment. But abandoning the treaty as a whole may increase the risks of states placing nuclear weapons in space and the seabed, drastically complicating nuclear deterrence. Accepting deployment limitations on drone swarms may be necessary to avoid more serious consequences.

Weapons Acquisition and the Future of Arms Control

The arms control framework applied to chemical, biological, and nuclear weapons offers a model for future weapons that create the same concerns. The approach to countering these weapons includes international norms and treaties against the weapon’s usage, coupled with actions to defeat acquisition pathways and deter usage with threats of military force. Drone swarms and other future technologies may require the same approach. But to know for sure requires serious consideration of “weapons of mass destruction” as a category: What is it about these weapons that merits such a comprehensive response? It also requires serious debate over whether a country’s use of such weapons merits the use of military force in a conflict. And if so, under what conditions?

Shaping the Battlefield

Applying the arms control framework to future weapons will also influence the information and physical battlefields. International norms and treaties to counter traditional and emerging weapons of mass destruction shape the types and quantity of capabilities that adversaries and friendly forces deploy. A treaty restricting swarms with more than 1,000 drones would simplify U.S. planning requirements, to the degree the treaty is adopted, of course. An adversary might just develop a 999-drone swarm, but the risks of a 10,000-drone swarm are reduced. That simplifies requirements, acquisition, and deployment of counter-drone systems. Likewise, international norms and treaties shape the information battlefield. The public may latch onto the belief of a given weapon as being capable of mass destruction, influencing public opinion regarding the weapon system and state behavior. Of course, this sort of information-shaping is more likely to affect democratic regimes where public opinion plays a larger role in shaping defense policy.

Applying experiences from previous arms control efforts can help counter emerging risks. Whether the United States and global governments elect to address drone swarms or other emerging technologies as weapons of mass destruction has a significant impact for national defense and international security. “Weapons of mass destruction” versus alternative terms may be a war of words, but the consequences are real.

Zachary Kallenborn is a national and homeland security consultant, specializing in unmanned systems, drone swarms, homeland security, WMD warfare, and WMD terrorism. His research has been published in the *Nonproliferation Review*, *Studies in Conflict and Terrorism*, *War on the Rocks*, the Modern War Institute at West Point, *DefenseOne*, and other outlets. His work has been written about and shared in *Forbes*, *Popular Mechanics*, the *National Interest*, *Homeland Security*

Today, Yahoo News, and other national and international outlets. His most recent study at the USAF Center for Strategic Deterrence Studies examines whether drone swarms could constitute WMD.

All views are the author's own and do not necessarily represent those of any current or former employer, funder, or affiliate.

<https://warontherocks.com/2020/07/in-defense-of-wmd-a-war-of-words-and-the-challenge-of-swarms/>

[Return to top](#)

Arms Control Wonk (Washington, D.C.)

Nixon and Kissinger

By Michael Krepon

July 20, 2020

Quote of the week:

“We have usurped many of the powers we once ascribed to God. Fearful and unprepared, we have assumed lordship over the life or death of the whole world – of all living things. The danger and the glory and the choice rest finally in man. The test of his perfectibility is at hand. Having taken Godlike power, we must seek in ourselves for the responsibility and the wisdom we once prayed some deity might have. Man himself has become our greatest hazard and our only hope. So that today, St. John the apostle may well be paraphrased ... In the end is the Word, and the Word is Man – and the Word is with Men.” – John Steinbeck’s Nobel Prize acceptance speech, 1962 (with thanks to Danny Meehan)

I’ve occasionally written posts on “Heroes of Arms Control,” like the last one on Tom Schelling. George Shultz was a hero of arms control, employing the leverage provided by new missiles and Reagan’s beloved and reviled Strategic Defense Initiative to steer Reagan — with an essential assist from Mikhail Gorbachev — toward an astounding treaty that broke the back of the arms race. James Baker was a hero of arms control, running the table to produce extraordinary treaties when circumstances permitted. No Secretary of State has accomplished more in this field.

But how do we categorize Richard Nixon and Henry Kissinger? Are they heroes for signing off on the Anti-Ballistic Missile Treaty, which was a necessary precondition for deep cuts once political conditions permitted a quarter-century later? Or were they villains for agreeing to the Interim Agreement that let MIRVs run free, ensuring a steep increase in warheads and nuclear war-fighting capabilities that offended Doves and Hawks alike?

My answer is “none of the above.” Nixon and Kissinger were hemmed in by and yielded to political, technological, bureaucratic and congressional realities beyond their control. They were realists, not heroes or villains.

Both men were unenthusiastic about the ABM Treaty. They proposed four ways to deal with strategic defenses – zero, one, three and four sites – and thought better of all four proposals. They reluctantly agreed to two sites – one for the national capital area and another for a distant missile field – and wound up with none. They subsequently agreed to a Protocol limiting each country to one site. Multi-site deployments weren’t in the cards until after George W. Bush withdrew from the ABM Treaty in 2002. And even then, they were bedeviled by technical problems and budgetary constraints.

The Pentagon wasn't enthusiastic about spending large sums for ABM deployments that would not be effective and instead placed its bets on MIRVs that were sure to work and to effectively counter the huge build up of Soviet land-based missiles. There was nothing far-sighted or heroic about Nixon and Kissinger signing off on the ABM Treaty; they yielded to reality.

Nor were Kissinger and Nixon villains for agreeing to the Interim Agreement and letting MIRVs run free. A stabilizing agreement would have traded off MIRVs in return for prohibiting upgrades in Soviet land-based missiles. A flight test ban on MIRVs would have been required, because once adequately flight tested, the absence of MIRVs could only have been confirmed by on-site inspections, and neither superpower was prepared for that in 1972.

But this was tricky. MIRVs had already begun flight testing, and the Soviet Union had begun to flight test unguided, multiple warheads atop a single missile — MRVs, but not MIRVs. Secretary of Defense Melvin Laird professed difficulties in distinguishing between the two and Deputy Secretary of Defense David Packard testified that it didn't matter: large Soviet missiles carrying high-yield warheads with inferior accuracy were threatening enough.

Trading off MIRVs for prohibiting Soviet ICBM upgrades would have been consistent with what Schelling and Mort Halperin had in mind in Strategy and Arms Control. But this was impossible because the Pentagon and the Soviet General Staff would have none of it. Their backers elsewhere weren't buying, either. It was hard enough for Nixon and Brezhnev to agree to forgo national missile defenses. To forgo their missile modernization programs as well was beyond the pale. The same conditions that led to the ABM Treaty also led to their decisions to upgrade missiles and place MIRVs on them.

Deterrence requires reassurance to succeed, but the principle form of reassurance, arms control, was in its infancy. Neither superpower could take significant steps limiting offenses as well as defenses in 1972. When the Strategic Arms Limitation Talks began in late 1969, neither side could tell whether even limited success was possible. Brezhnev pointedly threatened his negotiators with prison or worse if they spilled state secrets before sending them off to meet with Gerard Smith and the U.S. delegation. Smith had ambitious proposals in mind, but the Pentagon had quite different ambitions.

Before the talks began, the Kremlin had caught up and surpassed the number of U.S. missile launchers while the U.S. force structure had already jelled. The Pentagon had ambitious programs to counter the Soviet missile build up. All three legs of the Triad would be modernized, and cruise missiles would supplement all three legs.

The most important upgrade was MIRVs. The Pentagon had a five-year lead in MIRVing, and it wasn't going to give this lead up. Nor were its backers on Capitol Hill. MIRVs and subsequent increases in accuracy were the counter to Soviet throw-weight advantages. Nixon and Kissinger again yielded to political, technological, and bureaucratic realities. They couldn't stop Soviet ICBM upgrades and so resorted to a feckless unilateral statement in the Interim Agreement expressing the U.S. preference – a statement that led to charges of Soviet cheating later on.

The result was messy and terribly short-sighted, but stopping MIRVs was more than the traffic could bear. The ABM Treaty and the Interim Agreement worked against each other. One laid the basis for stabilizing the arms competition while the other accelerated the competition. There was no easy way to clean up this mess. MIRVs could only be capped at high numbers, reflecting U.S. force planning, and the strategic arsenals of both superpowers reached five-digit-sized numbers.

The manner in which Nixon and Kissinger negotiated the SALT I accords – their backchannel with Soviet Ambassador Anatoly Dobrynin, deceptions, and inattention to detail – as well as the terms of the Interim Agreement created a strong backlash. The Agreement that sailed through Congress with

only two votes in opposition in the House of Representatives and the Senate was widely reviled within two years of its conclusion.

Nixon and Kissinger were neither heroes or villains. They were practitioners of the art of political expediency. But they deserve credit, along with the SALT I negotiators, for getting this process started. They ventured into the unknown and returned home with a limited and contestable proof of concept for strategic arms control. They also set in motion fierce debates about how best to proceed, debates that stymied their immediate successors, the administrations of Gerald Ford and Jimmy Carter, that tried to limit the damage resulting from the Interim Agreement's porous limitation on strategic offenses.

Better deals would have to wait for the likes of Shultz and Baker, and the advent of two leaders, Ronald Reagan and Mikhail Gorbachev, who couldn't be bothered by deterrence orthodoxy.

<https://www.armscontrolwonk.com/archive/1209740/nixon-and-kissinger/>

[Return to top](#)

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

The Risks of Australia's Solo Deterrence Wager

By Van Jackson

July 20, 2020

If you're a U.S. ally, it's got to be unnerving to watch a sitting U.S. president befriend enemies of democracy or repeatedly extort those who rely most on U.S. security commitments. And so it comes as little surprise that Australia, arguably America's closest ally in the Asia-Pacific, has decided to prepare for a world in which it may not be able to count on the United States to protect it from China. To that end, Australia's Prime Minister Scott Morrison recently announced the Defence Strategic Update, which amounts to an unprecedented attempt at rapid military modernization. The proposed \$575 billion (AUD) budget over the next decade includes investments in long-range precision-guided munitions, unmanned systems, intelligence platforms, and sensor networks.

With one vocal exception, most Australian national security pundits seem to have only glowing things to say about this dramatic increase in long-term defense capabilities. Some of the praise started even before the plan's release.

But the merits of a strategic decision depend on the plausibility of its wager: If you do X, you expect Y to occur because Z. Smart people need to be able to see (or deduce) that essential causal reasoning and find it plausible. When you make game-changing investments for strategic reasons — like a big spend to fit out a high-technology military — your logic should be as bulletproof as possible. And you should take care to manage, or at least be aware of, the risks associated with your decision.

That's why praise for the Defence Strategic Update is premature and possibly detrimental to Australian strategy itself. It's not that the plan fails the laugh test. It's on trend with "future of warfare" technological forecasts. It makes sense for Australia to concentrate its resources on its immediate region rather than benchmarking its military against a future of far-flung global operations. The assessment of the security environment to which it's responding — one characterized by an imperious if not imperial Chinese expansionism and an unreliable, strategically incompetent U.S. ally — is hard to dispute. And Australia does need to hedge against erratic U.S. foreign policy and Chinese aggression in its neighborhood. All of that makes it an analytically serious document.

But the implied new purpose of Australia's modernization bid is to deter China in limited conventional warfare on its own, without the United States. Should we believe that the military capabilities in development will deter China better than Australia's existing strategy and force structure?

While we can't possibly know the answer to that yet, we can prefigure why it could fail despite the best of intentions: unwarranted optimism about Chinese lack of resolve, an imbalance of forces favoring Beijing, and inadvertently diluting the credibility of the threat that a fight against Australia involves fighting the United States. And if Australia's wager on a unilateral deterrence option goes bad, it's not just Canberra that will pay the price. The United States and Australia's neighbors will bear the cost too.

What's the Wager?

The Defence Strategic Update states what it wants to do in the abstract: "Shape Australia's strategic environment; deter actions against Australia's interests; and respond with credible military force, when required." Vague as that sounds, the hard test of Australia's military modernization is really about deterring China. Its new wager is something like, "If we invest in longer-range precision-guided missiles and unmanned systems (X), the result will be no Chinese aggression in Australia's immediate region (Y) because (Z)." Formulated in this way, Z — the how of its wager — is unspecified but likely one of two very different possibilities.

There are some indications that Australia aims to achieve deterrence by denial, which works by convincing China that Australia will physically prevent it from achieving its operational objective. Want to blockade Australia from Southeast Asia? There's no point in trying because we'll physically prevent you from setting up the blockade with our submarines, smart mines, F-35s, etc.

But there are also indications that Australia is really pursuing deterrence by punishment, which works by imposing costs on China if it attempts aggression adverse to Australian interests. Want to establish a beachhead on Papua New Guinea or bomb Darwin? We're going to attrit an unacceptably high percentage of your forces on the way in or retaliate in ways that will cost you dearly.

It matters whether Australia optimizes for denial or punishment or something else entirely. The distinction implicates different operational concepts, force posture requirements, and target sets. Denial, for instance, requires locally concentrated counterforce operations against the immediate threat, while cost-imposing punishment opens a wider range of retaliatory responses. It also matters whether deterrence — a concept that is nebulous and hard to measure — is really the goal of Australia's force structure bet. The document focuses on deterrence, but since that invokes all manner of imprecise and error-prone contextual and psychological factors, the art of deterrence should be a calculation of statecraft rather than a concrete aim of your defense budget. The role of force planning should be to make that statecraft possible. Ambitions greater than that risk chasing waterfalls.

This may seem like semantics, but it's something Australian strategists will have to straighten out in the near future. If deterrence is a military objective, the force may have to be sized and shaped primarily for signaling and bargaining games rather than for achieving operational effects. They overlap, but are different priorities.

What's the Risk?

Several risks of deterrence failure accompany Australia's current projected force regardless of whether it pursues a strategy of deterrence by denial or by punishment.

First, deterrence failure could arise from what appear to be overly optimistic assumptions about China. It is not obvious what assessment of Chinese resolve underpins Australia's deterrence

expectations. The history of China's military strategy suggests that it does not half-heartedly commit forces to combat and is generally willing to absorb a high cost when it does employ force. Combined with China's substantial military superiority, this makes it hard to envision how Australia's force of the future will physically prevent China (that is, deny it) from conducting any military operation to which it has committed itself. It also strains credulity to imagine that China would alternatively back down from the use of force because Australia is capable of holding some percentage of Chinese forces at risk of retaliation, unless the balance of interests dramatically favored Australia. The only scenario I can think of where Australia's stakes significantly outweigh China's are in direct defense of Australian or New Zealand territory, the most unlikely scenario involving Sino-Australian conflict.

Second, deterrence could fail because the balance of forces favors China even after Australia updates its force structure. To take just one crucial example, China's missiles far outrange Australia's planned force. Australia's announced long-range anti-ship missile has a target range of less than 400 kilometers while China's DF-26 missile alone has a range of 4,000 kilometers. Australia has no prospect of realizing deterrence by punishment or denial without substantially closing that range gap. The willingness to invest in hypersonic glide-vehicle development suggests Australia recognizes the gap problem, but its investment is on too long of a timeline to actually rectify it. Rather than plan to fight a wooden dummy, Canberra should assume Beijing will be improving its capabilities over the next decade and a half as well. Put differently, Australian weapons only have a chance at deterrence magic if we generously assume that either China will deploy missiles within Australian range when it shouldn't have to, or that Australia will be able to somehow forward position its precision-guided missiles and unmanned systems against China unchallenged ahead of a conflict. Neither is very likely, and both concern only a narrow universe of hypothetical use-cases for what is a very expensive force.

But wishful thinking about China's resolve and the unfavorable imbalance of forces are smaller matters compared to the third risk: diluting alliance threat credibility. For generations, as Hugh White notes, Australian warfighting was to take place in the context of a U.S.-led coalition. Australia tailored its force structure and much of its foreign policy accordingly. Because of this, it was unthinkable that Australia would have to fight the People's Liberation Army alone. If China faced the Australian Defence Force, it would've had a high expectation of also facing the U.S. military.

No longer. The way Australia is choosing to hedge against American unreliability introduces the risk that China will calculate (correctly or incorrectly) that a conflict with Australia will be a one-on-one battle. Australian pundits are not wrong to highlight that the new force structure plan gives Canberra greater options, but to the extent those options involve solo deterrence, they make the U.S. commitment to Australia's defense less necessary. China is far less likely to be deterred by Australia on its own than if it believes the United States will fight alongside Australia. And it's easy to imagine scenarios where an overconfident China determines that the American public would see no need to defend Australia when it has developed an ability to defend itself. I'm not saying that would be a prudent calculation on Beijing's part — I think it would be foolish — but as Kenneth Waltz said, states "are free to do any fool thing they care to" and China's no exception. Good strategy should disabuse would-be adversaries of foolish notions rather than encourage them.

To be clear, the United States has put Australia in this position. U.S. foreign policy itself is Asia's (and by extension Australia's) primary source of uncertainty and the Defence Strategic Update is a hedge against that. But hedging can take many forms and choosing to do it this way may inadvertently erode the central wager of Australian security for generations (alliance threat credibility) without actually replacing it.

And I don't mean that Australia should just wish away U.S. volatility. It could reach a specialized division of alliance labor that makes it more likely for the United States to uphold its commitment by, for instance, narrowing the role it would play in an Antipodean conflict, or by shaping its forward presence into more of a deliberate tripwire posture. Australia might even hedge with deterrence constructs that embed the Australian military in partnership with third parties other than the United States. The point is simply that while Australian strategy must respond to a security environment in which the United States has recently played an inflammatory role, there is nothing inevitable about how Australia responds to it.

Canberra is making a bold bet, and in many respects it's a well-informed one. But it's pregnant with risks. The task for strategists on both sides of the Pacific is now to diagnose and come up with ways to manage them.

Van Jackson, Ph.D., is a professor of international relations at Victoria University of Wellington, host of The Un-Diplomatic Podcast, and associate editor of the Texas National Security Review. From 2009 to 2014, he was a strategist and policy adviser in the Office of the Secretary of Defense. He is also author of the forthcoming *Risking the Asian Peace: American Statecraft and the Fate of the Indo-Pacific* with Yale University Press.

<https://warontherocks.com/2020/07/the-risks-of-australias-solo-deterrence-wager/>

[Return to top](#)

ABOUT THE USAF CSDS

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

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

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

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

DISCLAIMER: Opinions, conclusions, and recommendations expressed or implied within are solely those of the authors and do not necessarily represent the views of the Air University, the United States Air Force, the Department of Defense, or any other US government agency.