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Feature Report

“Geometries of Deterrence: Assessing Defense Arrangements in Europe’s Northeast”. Published by Atlantic Council; June 2, 2020

<https://www.atlanticcouncil.org/in-depth-research-reports/report/geometries-of-deterrence-assessing-defense-arrangements-in-europes-northeast/>

The conventional military threat from Russia towards Europe most acutely affects a number of frontline Nordic and Baltic states from the Barents Sea in the Arctic through the Baltic Sea region: Estonia, Finland, Latvia, Lithuania, Norway, Poland, and Sweden. Since Russia’s invasion of Crimea in 2014, these countries, in concert with other Euro-Atlantic allies and partners, have concentrated on strengthening their own defenses and on developing and enhancing eight sets of different defense cooperation arrangements.

As the only two non-NATO and militarily nonaligned nations in the region, Finland and Sweden’s role in regional security and their level of cooperation with these and other partners poses challenges as well as opportunities for deterrence and defense in Europe’s northeast. These two countries have particularly emphasized cooperation with partners as they seek to build an interlocking web of security relationships to improve defense in the region. The core arrangements within this network include.

The Finnish-Swedish bilateral defense relationship

Nordic Defense Cooperation

Nordic-Baltic Eight

The Northern Group

NATO Partnerships

The European Union

Ad hoc arrangements such as the Joint Expeditionary Force, Framework Nations Concept, and European Intervention Initiative

Finnish-Swedish-US trilateral and bilateral defense cooperation

These “geometries of deterrence” vary in scope, scale, and membership, but taken together, they enhance a range of important components of deterrence. In *Geometries of Deterrence*, Hans Binnendijk and Conor Rodihan assess the contributions of each of these arrangements against an ideal or “gold standard” for conventional military deterrence, before evaluating the arrangements collectively and offering recommendations to further strengthen deterrence for Finland, Sweden, and indeed for all of Northeastern Europe.

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“China is in the middle of a significant modernisation and expansion of its arsenal, and India and Pakistan are also thought to be increasing the size of their nuclear arsenals,” the report said.

US COUNTER-WMD

- [US Senate Approves Funding for Hawaii Missile Radar System](#) (Honolulu Civil Beat)
It's not yet clear where the new system would be based, but military officials had been studying three locations on Oahu's North Shore and one in West Kauai.

US ARMS CONTROL

- [New Tensions Dim Hopes for Salvaging Iran Nuclear Deal](#) (Science)
By 20 May, it [Iran] had stockpiled 1572 kilograms of enriched uranium, ostensibly for use in civilian reactors.
- [Former US Forces Korea Commander: North Korea Needs to be 'Agitated' Right Now](#) (Washington Examiner)
“I'm talking about nuclear-capable bombers, F-35 joint strike fighters, aircraft carriers, nuclear submarines, all of these things that are options to simply show presence,” he said.
- [NATO Chief Tries to Reassure Allies After U.S. Announces Plan to Decrease Forces in Germany](#) (RFE/RL)
Jens Stoltenberg also said that the alliance had no intentions to deploy land-based nuclear missiles in Europe, even as Russia deploys missiles that Washington says violated a key Cold War-era arms treaty.

COMMENTARY

- [Why a Decision on a Second US Plutonium-Pit-Production Factory Should Be Delayed](#) (Bulletin of the Atomic Scientists)
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“The United States should seize opportunities to advise and assist partners, helping them to bolster their whole-of-government national resilience while preserving Western influence and deterring adversaries’ advances.”
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“The Department of Energy has announced a plan to restart production of nuclear weapons-grade, highly enriched uranium (HEU) for the first time since 1992.”
- [What Japan’s U-turn on Aegis Ashore Says about US Alliance Management](#) (ASPI)
“Not only are those risks overstated, but Tokyo’s action is also prudent for domestic, operational, strategic and alliance-management reasons.”

NUCLEAR WEAPONS AND DETERRENCE

Strategy Bridge (Washington, D.C.)

Balance with the Political End State: Case Studies from Korea and Vietnam

By Paul K. Wyatt, Jr.

June 16, 2020

Great power competition is returning to the global stage. What can America's past conflicts during great power competition teach us? Generally, warfare from 1945 to 1991 was politically limited by the deterrent effect of nuclear weapons coupled with a desire to limit third-party intervention among great power competitors—the strategic context. The Korean and Vietnam Wars can teach lessons about the relationship between the strategic context and balancing ends, ways, and means during great power competition.

Wars during great power competition are often fought for limited political objectives because of the threat of third-party intervention. Nations must understand the strategic context and balance the political objective to fit within it in order to have the greatest chance for an acceptable political outcome—as the means and ways applied are less likely to increase in wars for limited objectives. Given that political objectives are limited during great power competition between nuclear armed nations, this and the unwillingness to escalate the conflict create additional constraints upon the belligerents. As Donald Stoker writes, “All wars have constraints, but in wars for limited political aims, the constraints intrude more fiercely.”[1]

One critical aspect of the Korean and Vietnam Wars was that the United States was concerned with third-party intervention from the Soviet Union and China—the great powers opposed to the United States.[2] This is a crucial point in understanding the strategic context of the geopolitical environment as it pertained to nuclear deterrence, because it limited the political end state that nations pursued. As Clausewitz wrote, “Once the extreme is no longer feared or aimed at, it becomes a matter of judgment what degree of effort should be made.”[3] The defining characteristic that made the Korean War successful for the United States was the appropriate balance between the means applied to prosecute the war, the appropriate ways to apply the means, and the political end states of all belligerents within the context of the strategic situation. Conversely, the Vietnam War demonstrated an instance where, within the strategic context, the means and ways required for victory were insufficient or incompatible with the political ends.

To set conditions for this article, defining terminology is appropriate. War is defined as the politically sanctioned use of military violence against another political entity in the pursuit of political objectives, or in the words of Clausewitz, “The political object is the goal, war is the means of achieving it.”[4] Warfare is defined as the methods or activities for waging war; warfare is correlated to the ways a war is waged as well as the means applied to wage the war. Success is defined as the attainment of acceptable political end states—in this case for the United States. Political end states are the set of conditions that define the achievement of the state's political objectives.[5] Finally, the linkage between ends, ways, and means is defined in the following manner:

Ends answer ‘what’ is to be accomplished. Ways describe ‘how’ the ends are to be accomplished and they link the means to ends. Means, answer the question ‘with what?’, and are the resources which can be manipulated to support the ends.[6]

The introduction of nuclear weapons into the equation imposed political limitations on the means and ways applied during the Cold War. Theoretically, successful prosecution of warfare is predicated on which side can exert the most force for the longest period until the other side capitulates or is destroyed; what Clausewitz referred to as the “maximum exertion of force.”[7] While there have always been mitigating factors that limit a nation’s means or ways, the development of nuclear weapons and their subsequent proliferation has made those factors more pronounced. As Clausewitz wrote, “If one side uses force without compunction...while the other side refrains, the first will gain the upper hand. That side will force the other to follow suit; each will drive its opponent toward extremes, and the only limiting factors are the counterpoises inherent in war.”[8]

During the Cold War, as the destructive capacity of weapons increased to a level where all belligerents in the conflict, and potentially the entire world, could be destroyed, the military options available to nuclear-armed political bodies engaged in conflict with non-nuclear armed political bodies became limited by the possibility of third party intervention. As a result of this historical shift, the ability of leaders and decision makers to understand the political and strategic environment when waging war became even more paramount. The deterrent effects of nuclear weapons within the context of the Cold War were evident when then-Secretary of Defense, George C. Marshall described the Korean War “...as a limited war which I hope will remain limited.”[9] The Korean War demonstrated a political understanding of the strategic and political situation brought about by nuclear weapons through the deliberate choice to avoid conditions that would cause the war’s escalation into a larger conflict with the Soviet Union or China.[10] This was the defining political end state that subsequently drove the means and ways of prosecuting the war.[11] Prior to the Chinese entrance into the Korean War, President Harry Truman changed the political objective from re-establishing the border with North Korea to unifying the Korean Peninsula under the South Korean government. Once the Chinese intervened, the political end state of the war reverted to a bifurcated Korea at the 38th Parallel.[12] Once it became clear the use of conventional United Nations forces on the Korean peninsula alone would not be sufficient to achieve the political end state of Korean reunification without third party (Chinese or Soviet) intervention, President Truman again changed the political objective due to the overarching desire to limit further escalation.

The strategic context and the political objectives of the war heavily influenced the ways of achieving the political end state. The United States and China both wished to confine the war to the Korean peninsula. The amphibious landing of American forces at Incheon was an example of the military options available when the political end state was reunification. When the political end state changed, the United States opted for a military strategy of attrition instead of operational maneuver to defeat the Chinese.[13] Rather than risk further escalation, the United States limited the ways applied to achieve its political objective. For instance, the United States could have targeted the Chinese war economy by blockading Chinese ports or conducting strategic bombing of the Chinese mainland, but political leaders wary of Soviet intervention prevented the military from employing these ways.[14] The ways used during this period focused on the use of air power to disrupt and destroy the Chinese and North Korean supply lines, thus limiting their offensive capability and making peace negotiations more likely.[15] Additionally, ground operations were limited to raids and small unit actions aimed at seizing and retaining key terrain along the 38th parallel to aid in negotiations.[16]

The Korean War shows the importance of understanding the strategic context: limiting the possibility for escalation with the Soviet Union and China. It also demonstrates the strategic imperative of balancing the political end state of retaining a South Korea free of communism without bringing the Soviet Union into the war and the appropriate ways and means. While the

ways and means chosen were not tactically favorable to the military strengths of the United States, namely operational maneuver, they were enough to achieve the stated political end state. The Vietnam War, on the other hand, presents a case study in the unsuccessful balance of ends, ways, and means by a failure to adjust the political objective.

The Vietnam War demonstrates what can occur when the political end state requires ways and means that are incompatible due to a lack of understanding of the strategic context. As Harlan K. Ullman argued, “Policy must begin with identifying outcomes that can be realistically achieved and then proceed by linking means with ends and available resources.”[17] The policy that led to how the Vietnam War was conducted did not begin this way. The strategic context of the Vietnam War began in the mid-1950s when the United States sent advisors to South Vietnam to aid in the containment of communism.[18] A political objective, based on the Domino Theory, was being shaped: the containment of the spread of communism without major conflict with China or the Soviet Union. As President Kennedy stated, “We made this effort to defend Europe. Now Europe is quite secure. We also have to participate—we may not like it—in the defense of Asia.”[19] President Kennedy faced a deteriorating situation in Vietnam and increased the number of advisors that were present in South Vietnam from just under 1,000 to over 16,000.[20] The increase in advisors demonstrated an increase in the means to achieve the political end state of a communist free South Vietnamese government.

However, President Kennedy, as well as subsequent U.S. presidents during the war, underestimated the will of the North Vietnamese people to unify their country.[21] These U.S. leaders and their advisors made a key strategic error by ignoring the prescient historic advice of Clausewitz who wrote, “If you want to overcome your enemy you must match your effort against his power of resistance, which can be expressed as the product of two inseparable factors, viz. the total means at his disposal and the strength of his will.”[22] In Vietnam, the means the U.S. applied to the conflict were sufficient. By 1968, Operation Rolling Thunder delivered more ordinance in three years than in all of Europe during World War II.[23] However, the ways applied to meet the political end state were incompatible. As one naval officer candidly explained to President Johnson in 1967, “Mr. President, we can get out or we can get in—that means taking the fight to the other side, blockading Haiphong and the other ports, and sending an amphibious force...cutting that country in half.”[24] The strategic context of the war, however, meant that applying more aggressive ways toward achieving the political end state, such as blockading the Soviet arms shipments into Haiphong harbor, was not politically acceptable due to the perceived risk of escalation with the Soviet Union or China.[25] Even before that, by 1965, the United States had no desire to negotiate with North Vietnam and wanted to extricate itself from the conflict without humiliation or losing world standing. Saving the South Vietnamese government was only a way to achieve that goal, not the goal itself.[26]

Given the incongruent trilemma political end state of no negotiations, no humiliation, and no escalation, the United States could not achieve its political objectives in South Vietnam. The ways and means were not only de-linked from the political end state, but many would counteract each other. For instance, to end the conflict without negotiation, the United States would have to defeat North Vietnam and unify the two countries, but that was not possible without escalating the war and potentially bringing the Soviet Union and China directly into the conflict. If the United States was willing to negotiate, that could potentially bring humiliation because the South Vietnamese government would likely collapse without significant support. One of the only ways left to the United States was then to conduct a war of attrition over time. However, time was not a resource the United States had in significant supply. In 1972, the Democratic party won a majority of seats in Congress and would ultimately de-fund the war, bringing an end to America’s involvement in Vietnam.[27] The un-willingness of the United States to alter one or more of its political end states

or link the correct ways to the already ample means led to achieving only one of its three political objectives: not bringing the Soviet Union or China directly into the war.

GIVEN THE INCONGRUENT TRILEMMA POLITICAL END STATE OF NO NEGOTIATIONS, NO HUMILIATION, AND NO ESCALATION, THE UNITED STATES COULD NOT ACHIEVE ITS POLITICAL OBJECTIVES IN SOUTH VIETNAM.

In conclusion, war is not limited nor is it total. War, and by extension, warfare, is situationally unique. Each instance is shaped through internal and external political factors, as it always has been. Understanding those factors and successfully balancing them with the appropriate means and ways to prosecute war is the defining characteristic of successful warfare. The Korean War is an example of successful warfare because the means and ways applied were balanced with the political end state within the context of the strategic situation. The Vietnam War is an example where those three factors were not balanced and the political objectives were not met. Understanding political objectives and their relationship to ends, ways, and means will have even more gravity as the world returns to great power competition between nuclear-armed nations, especially with the advent of increased technology and the potential for anonymous belligerents and non-state actors, further complicating an already strategically complex world.

Paul K. Wyatt Jr. is a U.S. Army officer. The views expressed herein are the author's alone and do not reflect those of the U.S. Army, the Department of Defense, or the U.S. Government.

NOTES:

[1] Donald Stoker, *Why America Loses Wars: Limited War and U.S. Strategy from the Korean War to the Present* (Cambridge, United Kingdom; New York, NY, USA: Cambridge University Press, 2019), 82.

[2] *Ibid.*, 82.

[3] Carl von Clausewitz, *On War*, Indexed Edition, trans. Michael Eliot Howard and Peter Paret, Reprint edition (Princeton, N.J.: Princeton University Press, 1989), 80.

[4] Clausewitz, *On War*, Indexed Edition, 80.

[5] Chris Springer, *U.S. Military Professionals' Guide to Understanding Strategy* (Fort Leavenworth, KS: US Army Command and General Staff College, 2019), 4.

[6] *Ibid.*

[7] Clausewitz, *On War*, Indexed Edition, 77.

[8] Clausewitz, *On War*, Indexed Edition, 75–76.

[9] Stoker, *Why America Loses Wars*, 82.

[10] *Ibid.*, 111.

[11] "Dean Acheson to Paul Nitze | Harry S. Truman," 1, accessed February 3, 2020, <https://www.trumanlibrary.gov/library/research-files/dean-acheson-paul-nitze?documentid=NA&pagenumber=1>.

[12] Stoker, *Why America Loses Wars*, 111.

[13] Spencer C. Tucker, "The Korean War, 1950-53: From Maneuver to Stalemate," *The Korean Journal of Defense Analysis* 22, no. 4 (December 2010): 429.

[14] Stoker, *Why America Loses Wars*, 111.

[15] Spencer C. Tucker, "The Korean War, 1950-53: From Maneuver to Stalemate," 430.

[16] Ibid., 428.

[17] Harlan Ullman, *Anatomy of Failure: Why America Loses Every War It Starts* (Annapolis, Maryland: Naval Institute Press, 2017), 31.

[18] Ibid., 41.

[19] Ibid., 31.

[20] Ibid., 45.

[21] Ibid.

[22] Clausewitz, *On War*, Indexed Edition, 77.

[23] “Rolling Thunder,” *Air Force Magazine*, accessed March 1, 2020, <https://www.airforcemag.com/article/0305thunder/>.

[24] Ullman, *Anatomy of Failure*, 45–47.

[25] Ibid., 55.

[26] “Draft Memorandum from McNaughton to Robert McNamara, ‘Proposed Course of Action Re: Vietnam,’ (Draft) 24 March 1965,” 2, accessed February 1, 2020, <https://www.mtholyoke.edu/acad/intrel/pentagon3/doc253.htm>.

[27] Stoker, *Why America Loses Wars*, 77.

<https://thestrategybridge.org/the-bridge/2020/6/16/balance-with-the-political-end-state-case-studies-from-korea-and-vietnam>

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SIPRI (Solna, Sweden)

Nuclear Weapon Modernization Continues but the Outlook for Arms Control is Bleak: New SIPRI Yearbook Out Now

By SIPRI

June 15, 2020

The Stockholm International Peace Research Institute (SIPRI) today launches the findings of SIPRI Yearbook 2020, which assesses the current state of armaments, disarmament and international security. A key finding is that despite an overall decrease in the number of nuclear warheads in 2019, all nuclear weapon-possessing states continue to modernize their nuclear arsenals.

Nuclear warhead reductions continue despite growing tensions

The nine nuclear-armed states—the United States, Russia, the United Kingdom, France, China, India, Pakistan, Israel and the Democratic People’s Republic of Korea (North Korea)—together possessed an estimated 13 400 nuclear weapons at the start of 2020. This marked a decrease from the 13 865 nuclear weapons that SIPRI estimated these states possessed at the beginning of 2019 (see table below). Around 3720 of the nuclear weapons are currently deployed with operational forces and nearly 1800 of these are kept in a state of high operational alert.

The decrease in the overall number of nuclear weapons in the world in 2019 was largely due to the dismantlement of retired nuclear weapons by Russia and the USA—which together still possess over 90 per cent of global nuclear weapons. The reductions in US and Russian strategic nuclear forces required by the 2010 Treaty on Measures for the Further Reduction and Limitation of

Strategic Offensive Arms (New START) were completed in 2018, and in 2019 the forces of both countries remained below the limits specified by the treaty.

New START will lapse in February 2021 unless both parties agree to prolong it. However, discussions to extend New START or to negotiate a new treaty made no progress in 2019. This was due in part to the US administration's insistence that China must join any future nuclear arms reduction talks—something that China has categorically ruled out.

'The deadlock over New START and the collapse of the 1987 Soviet–US Treaty on the Elimination of Intermediate-Range and Shorter-Range Missiles (INF Treaty) in 2019 suggest that the era of bilateral nuclear arms control agreements between Russia and the USA might be coming to an end,' says Shannon Kile, Director of SIPRI's Nuclear Disarmament, Arms Control and Non-proliferation Programme. 'The loss of key channels of communication between Russia and the USA that were intended to promote transparency and prevent misperceptions about their respective nuclear force postures and capabilities could potentially lead to a new nuclear arms race.'

Next-generation nuclear weapon systems are in development

Russia and the USA have extensive and expensive programmes under way to replace and modernize their nuclear warheads, missile and aircraft delivery systems, and nuclear weapon production facilities. Both countries have also given new or expanded roles to nuclear weapons in their military plans and doctrines, which marks a significant reversal of the post-cold war trend towards the gradual marginalization of nuclear weapons.

The nuclear arsenals of the other nuclear-armed states are considerably smaller but all these states are either developing or deploying new weapon systems or have announced their intention to do so. China is in the middle of a significant modernization of its nuclear arsenal. It is developing a so-called nuclear triad for the first time, made up of new land- and sea-based missiles and nuclear-capable aircraft. India and Pakistan are slowly increasing the size and diversity of their nuclear forces, while North Korea continues to prioritize its military nuclear programme as a central element of its national security strategy. Although North Korea adhered to its self-declared moratorium on the testing of nuclear weapons and long-range ballistic missiles in 2019, during the year it conducted multiple flight tests of shorter-range ballistic missiles, including several new types of system.

Low levels of transparency in reporting on nuclear weapon capabilities

The availability of reliable information on the status of the nuclear arsenals and capabilities of the nuclear-armed states varies considerably. 'The USA has disclosed important information about its stockpile and nuclear capabilities but in 2019 the US administration ended the practice of publicly disclosing the size of the US stockpile,' says Hans M. Kristensen, Associate Senior Fellow with SIPRI's Nuclear Disarmament, Arms Control and Non-proliferation Programme and Director of the Nuclear Information Project at the Federation of American Scientists (FAS). The UK and France have also declared some information. Russia does not make publicly available a detailed breakdown of its forces counted under New START, even though it shares this information with the USA.

The governments of India and Pakistan make statements about some of their missile tests but provide little information about the status or size of their arsenals. North Korea has acknowledged conducting nuclear weapon and missile tests but provides no information about its nuclear weapon capabilities. Israel has a long-standing policy of not commenting on its nuclear arsenal.

Source: SIPRI Yearbook 2020 * 'Deployed warheads' refers to warheads placed on missiles or located on bases with operational forces. ** 'Other warheads' refers to stored or reserve warheads and retired warheads awaiting dismantlement. *** The British Government has stated that the process to reduce the stockpile to 180 warheads is under way. Although some sources suggest that

the stockpile remains at 215 warheads, it is possible that, under this process, the stockpile may have already been reduced.

Notes: SIPRI revises its world nuclear forces data each year based on new information and updates to earlier assessments. Total figures include the highest estimate when a range is given. Figures for North Korea are highly uncertain and are not included in total figures. All estimates are approximate.

A year of rising international instability

The 51st edition of the SIPRI Yearbook reveals a continuing deterioration in the conditions for international stability. This trend is reflected in, among other things, an unfolding crisis of nuclear arms control that suffered further setbacks in 2019. 'In these times of ever-increasing geopolitical tensions, the absence of adequate measures to monitor nuclear arsenals and to prevent the proliferation of nuclear weapons and materials is a particularly worrying development,' says Kile.

In addition to its detailed coverage of nuclear arms control and non-proliferation issues, the latest edition of the SIPRI Yearbook also includes insight on developments in conventional arms control in 2019; regional overviews of armed conflicts and conflict management; in-depth data and discussion on military expenditure, international arms transfers and arms production; and comprehensive coverage of efforts to counter chemical and biological security threats.

For editors

The SIPRI Yearbook is a compendium of cutting-edge information and analysis on developments in armaments, disarmament and international security. Four major SIPRI Yearbook 2020 data sets were pre-launched in 2019–20: the top 100 arms-producing companies (December 2019), international arms transfers (March 2020), world military expenditure (April 2020) and trends in multilateral peace operations (May 2020). The earlier releases are available at www.sipri.org/media/pressreleases. The SIPRI Yearbook is published by Oxford University Press. Learn more at www.sipriyearbook.org.

Browse the SIPRI Yearbook 2020 and download the SIPRI Yearbook 2020 Summary (PDF).

<https://www.sipri.org/media/press-release/2020/nuclear-weapon-modernization-continues-outlook-arms-control-bleak-new-sipri-yearbook-out-now>

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Air Force Magazine (Arlington, Va.)

NATO Looks to Counter Russia's Growing Nuclear Capabilities

By Amy McCullough

June 17, 2020

NATO defense ministers on June 17 agreed on three measures aimed at countering Russia's "extensive and growing arsenal of nuclear-capable missiles" during the first of a two-day meeting held via secure teleconference due to the new coronavirus pandemic, NATO Secretary General Jens Stoltenberg said.

The "balanced package of political and military elements" includes efforts to strengthen the Alliance's integrated air and missile defense as well as its advanced capabilities, and adapts NATO's intelligence and exercises, Stoltenberg said.

“A number of allies have announced they are acquiring new air and missile defense systems, including Patriot and [Surface to Air Missile Platform/Terrain] batteries,” and allies also are investing in new platforms such as fifth-generation fighter aircraft, he said.

The announcement follows Russia’s decision last year to deploy SSC-8 missiles. Stoltenberg said the dual-capable, mobile missiles are “hard to detect” and “can reach European cities with little warning time.” They also “lower the threshold for the use of nuclear weapons,” he added, noting the deployment led to the end of the INF Treaty.

In addition, Russia’s hypersonic glide vehicle is now operational, and the country is modernizing its intercontinental ballistic missiles, has tested its air-launched ballistic missile system, and is developing a nuclear-powered cruise missile, he said.

“We have also seen a pattern over many years of irresponsible Russian nuclear rhetoric, aimed at intimidating and threatening NATO allies,” Stoltenberg said. “Russia’s behavior is destabilizing and dangerous.”

The comments come one day after two USAF F-22s, supported by KC-135 tankers and an E-3 AWACS aircraft, intercepted two formations of nuclear-capable Russian bombers off the coast of Alaska. Less than a week earlier, USAF Raptors intercepted two more Russian bomber formations flying off the Alaskan coast, and Russian fighters intercepted USAF B-52Hs operating in international airspace over the Baltic Sea on June 15.

NATO’s Nuclear Planning Group also met and determined it will not deploy new land-based nuclear missiles in Europe, though it will maintain the Alliance’s deterrence and defense posture.

“NATO’s nuclear sharing arrangements have served us well for decades. Allowing us to forge common ground on nuclear issues,” Stoltenberg said. “The NATO nuclear deterrent in Europe remains vital for peace and freedom in Europe.”

The defense ministers also called on China, as a rising power, to participate in global arms control, reiterated their commitment to step up efforts in Iraq to ensure the Islamic State group does not return, and said it will adjust its presence in Afghanistan to support the peace process, though the defense leaders also emphasized the need for the Taliban to “live up to their commitments,” Stoltenberg said.

<https://www.airforcemag.com/nato-looks-to-counter-russias-growing-nuclear-capabilities/>
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South China Morning Post (Hong Kong)

China Boosts Its Nuclear Arsenal as World’s Stockpile Shrinks

By Kristin Huang

June 15, 2020

China is one of the six countries that increased its nuclear arsenal in the past year, adding 30 warheads since a 2019 tally, according to a report by the Stockholm International Peace Research Institute on Monday.

The five other countries were India, Britain, Pakistan, Israel and North Korea, the report said, but all increased by fewer than 20 warheads.

“China is in the middle of a significant modernisation and expansion of its arsenal, and India and Pakistan are also thought to be increasing the size of their nuclear arsenals,” the report said.

Despite six countries having increased the number of their nuclear warheads, global inventories continue to decline, according to the report. This is mainly because the owners of the two largest arsenals – Russia and the United States – have decreased their number of warheads, mostly to dismantle retired stocks.

“At the same time, both the USA and Russia have extensive and expensive programmes under way to replace and modernise their nuclear warheads, missile and aircraft delivery systems, and nuclear weapon production facilities,” the report said.

The US has 1,750 deployed warheads – placed on missiles or located on bases with operational forces – and 4,050 reserve warheads or retired warheads awaiting dismantlement. Russia has 1,570 deployed warheads and 4,805 warheads either stored or to be dismantled.

‘New battlefield’ as China refuses to join nuclear talks with US, Russia

At the start of 2020, nine states – the US, Russia, Britain, France, China, India, Pakistan, Israel and North Korea – had an estimated total of 13,400 nuclear weapons, of which 3,720 were deployed with operational forces. About 1,800 of these were kept in a state of high operational alert, the report said.

Though six countries had increased their stocks, the combined number of their nuclear warheads was little more than 2,000, less than one-third of Russia’s total stockpile.

Outside nuclear armaments, new threats such as chemical and biological weapons kept emerging, making the world less stable than before, according to the report.

The report also warned of an arms race in outer space. Since 2017, the US has notably declared space to be a domain of war or an area for both offensive and defensive military operations, and France, India and Japan have followed the American lead by announcing dedicating military space units.

The SIPRI report comes after US President Donald Trump’s officials in May discussed conducting the first US nuclear test since 1992.

Zhou Chenming, a military expert based in Beijing, said the changes in the world’s military build-up signalled an increasingly precarious balance of peace.

“Many countries are now developing their own anti-missile systems that protect countries from being hit by a nuclear warhead, but once the systems are highly developed, it will lead to military adventurism – some countries might take the initiative to attack other nations – and make the world even more dangerous,” Zhou said.

<https://www.scmp.com/news/china/military/article/3089130/china-boosts-its-nuclear-arsenal-worlds-stockpile-shrinks>

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US COUNTER-WMD

Honolulu Civil Beat (Honolulu, Hawaii)

US Senate Approves Funding for Hawaii Missile Radar System

By Kevin Knodell

June 11, 2020

After losing funding in February, a missile defense radar system planned for construction in Hawaii is set to make a comeback after the U.S. Senate Armed Services Committee voted to pass on the annual National Defense Authorization Act for Fiscal Year 2021.

The \$740.5 billion defense policy bill includes a new Pacific Deterrence Initiative with \$1.4 billion in initial funding that would shore up U.S. military resources in the region against what it considers to be Chinese encroachment. Chinese and Indian troops are currently engaged in a tense border standoff and Chinese fighter jets entered Taiwanese airspace on Tuesday.

That includes a \$162 million authorization for the Homeland Defense Radar-Hawaii that reverses a Trump administration call to eliminate funding for the project in its proposed defense budget.

“As the United States continues to confront a range of strategic threats in the Indo-Asia-Pacific region, it is imperative that all Americans are protected by our ballistic missile defense system,” said Hawaii Sen. Mazie Hirono in a press release.

“Securing full funding authorization for HDR-H was my top priority in the NDAA this year because it will help keep Hawaii safe from external threats. I will continue to advocate for its inclusion in the final, approved package.”

It’s not yet clear where the new system would be based, but military officials had been studying three locations on Oahu’s North Shore and one in West Kauai. The press release from Hirono’s office stated that “this funding will support construction of HDR-H following the Missile Defense Agency’s completed siting process – a process that should include meaningful community engagement.”

Local activists had vocally opposed the project on grounds that the construction could threaten cultural sites and harm the environment.

<https://www.civilbeat.org/beat/u-s-senate-approves-funding-for-hawaii-missile-radar/>

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US ARMS CONTROL

Science (Washington, D.C.)

New Tensions Dim Hopes for Salvaging Iran Nuclear Deal

By Richard Stone

June 17, 2020

Since U.S. President Donald Trump pulled the United States out of the Iran nuclear deal 2 years ago, other signatories have tried to salvage the agreement in hopes of constraining Iran's ability to resurrect a nuclear weapons program. They haven't given up yet. And although Iran has resumed activities proscribed by the deal, including stepping up uranium enrichment, it has kept the door open to a reversal. But a series of disputes has continued to fray the agreement.

This week, questions about Iran's past clandestine atomic research program—including the disappearance of a missing uranium disk that could be used in a bomb, and illicit explosives testing—took center stage during a meeting of the governing board of the International Atomic Energy Agency (IAEA). And recent moves by the Trump administration have threatened to derail the conversion of Iranian nuclear facilities to reduce the risk they could contribute to a weapons program.

The Joint Comprehensive Plan of Action (JCPOA), as the 2015 deal is called, offered Iran relief from economic sanctions in exchange for dismantling large pieces of its nuclear program. Although experts generally agree the JCPOA worked, the Trump administration withdrew in May 2018, arguing it didn't go far enough. New U.S. sanctions have since battered Iran's economy.

"It hasn't been easy to watch the deal get dismantled," says a European diplomat who requested anonymity because talks with Iran are at a sensitive stage. Yet, "So far, Iran has been notably measured in building up its nuclear capabilities," Christopher Ford, assistant secretary for international security and nonproliferation at the U.S. State Department, recently told journalists.

An IAEA report shared with the governing board last week said Iran has been enriching uranium hexafluoride gas to 4.5% of the fissile isotope uranium-235 (U-235) over the past year. By 20 May, it had stockpiled 1572 kilograms of enriched uranium, ostensibly for use in civilian reactors. Nuclear bombs require enrichment levels exceeding 90% of U-235. "They could have made a lot more uranium at a higher enrichment level, but they haven't," says Richard Johnson of the nonprofit Nuclear Threat Initiative.

But Iran has greatly ramped up R&D on advanced centrifuges, which could speed up enrichment and reduce the "breakout time" needed to enrich a bomb's worth of weapons-grade uranium to 3 months. The JCPOA ensured the breakout time would exceed 1 year; the Western diplomat estimates it is still more than 6 months.

IAEA and outside analysts have also been poring over a cache of documents Israeli agents spirited out of Iran in early 2018. The nuclear archive, as it's called, has yielded fresh insights into Iran's past R&D on nuclear weapons and its plans for underground testing that IAEA says call into question the "correctness and completeness" of declarations Iran made in 2003, when it agreed to come clean on its nuclear program and permit inspectors broad access to sites.

Iran had hoped the deal would end questions about its shuttered bomb effort. But IAEA now wants to know the whereabouts of a disk of uranium metal that could be used to generate neutrons for triggering fission in a bomb's U-235 core. Evidence suggests it was housed at a site called Lavizan-

Shian in Tehran, which Iran razed and sanitized in 2003 and 2004. In January, IAEA asked Iran to give its inspectors access to two unnamed sites to verify the absence of undeclared nuclear material and activities. According to a report last week from the nonprofit Institute for Science and International Security, one site appears to be a testing range for high explosives near Abadeh, in central Iran. During a September 2019 press conference, Israeli Prime Minister Benjamin Netanyahu showed satellite images indicating that site was razed only in July 2019.

In a 28 January letter to IAEA, Iran rebuffed the agency, declaring it “will not recognize any allegation on past activities and does not consider itself obliged to respond to such allegations.” The dispute has raised fresh questions about Iran’s intentions and gives the United States another cudgel to try to persuade the United Nations Security Council to reimpose nuclear related sanctions.

Other components of the JCPOA are also foundering. Before the agreement, Iran was building a heavy water research reactor in Arak that would accumulate several kilograms of plutonium a year in spent fuel—enough for one or two bombs. The deal mandated a redesign of the Arak reactor to sharply curtail generation of plutonium. Even after walking away from the JCPOA, the United States had supported the redesign by waiving sanctions on other countries taking part in the work—until May, when the State Department decided to let the waivers expire as of 27 July. The move perplexed observers. “I cannot stress enough how bizarre it is to me that we demanded that the Iranians convert the reactor—and now we insist they must not convert it,” says Jeffrey Lewis of the Middlebury Institute of International Studies at Monterey.

If the Arak redesign falls through, Iran could claim that Western powers are out of compliance with the JCPOA, the diplomat says. Work will continue at Arak, which Iran has renamed Khondab, says Ali Akbar Salehi, president of the Atomic Energy Organization of Iran. “Soon the international community will witness our new achievements at the Khondab Research Reactor,” Salehi told Science. “Although sanctions impose some constraints, it invigorates us.” He did not provide details, and analysts are not sure what Iran’s plans are for the reactor.

U.S. withdrawal from the JCPOA has also scuttled a grand plan to turn an underground facility near the holy city of Qom into an international research center. Under the deal, Iran mothballed 700 uranium enrichment centrifuges at the Fordow site and worked with Russia to convert 328 others to producing isotopes for medicine. JCPOA negotiators floated other ideas, including installing a particle accelerator in the cramped space. But late last year, Iran resumed uranium enrichment in one Fordow hall. “That created a bit of a conundrum,” says Johnson, who was involved in the deal’s implementation during the Obama administration. Even minute traces of uranium would contaminate the medical isotope centrifuges. Worsening matters, a few weeks later, the United States canceled a sanctions waiver for the medical isotope work, prompting Russia to back away. Iran will continue to operate a dozen Russian-modified centrifuges on its own.

The failure to convert Fordow to a civilian research center “is a missed opportunity,” says Andrea Stricker, a nonproliferation analyst at the nonprofit Foundation for Defense of Democracies.

Despite the nuclear deal’s slow-motion collapse, observers don’t expect Iran to open up the throttle on its program—at least not before the U.S. elections in November. If Democratic presidential candidate Joe Biden wins, the next administration “may try to resurrect some form of the JCPOA,” Stricker says. “And the Iranians would probably want to test and see what they can get.”

<https://www.sciencemag.org/news/2020/06/new-tensions-dim-hopes-salvaging-iran-nuclear-deal>

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Washington Examiner (Washington, D.C.)

Former US Forces Korea Commander: North Korea Needs to be 'Agitated' Right Now

By Abraham Mahshie

June 17, 2020

Retired Army Gen. Vincent Brooks, former commander of U.S. Forces Korea, said Wednesday that North Korea recently blowing up a liaison office with South Korea and signaling that it will remilitarize the security zone must be countered with military measures to shore up the U.S.-South Korea partnership.

“North Korea, I believe, needs to be agitated right now as a result of this so that they feel that they may have overstepped,” Brooks said in a virtual conversation hosted by the Center for Strategic and International Studies.

“It’s about causing a change in calculus, not about causing an incident,” he said, suggesting the United States could lift the embargo on strategic assets on the Korean Peninsula.

“I’m talking about nuclear-capable bombers, F-35 joint strike fighters, aircraft carriers, nuclear submarines, all of these things that are options to simply show presence,” he said.

Brooks was commander of U.S. Forces Korea between 2016 and 2018, a time when the North and South signed an agreement to lessen tensions in the Demilitarized Zone by suspending military exercises along the border and removing guard posts.

The former commander also suggested that now might be the time to announce U.S.-South Korea exercises planned for later this summer.

“We want to take some steps that cause them to hesitate on the subsequent steps that they already have in mind,” he said.

Brooks said he fully expected North Korean work crews to appear in the border area in the next three to five days to reconstruct the 11 guard posts that were removed in fall 2018 and for the North to reintroduce weapons in the sensitive security zone.

“I really worry about that joint security area because that doesn’t have walls inside of it, and the physical proximity is so close that a miscalculation is highest there,” he said, stressing that military measures must be accompanied by diplomatic efforts.

“There is at least one motivation here that North Korea has: to drive a wedge between Washington and Seoul,” he said. “The best leverage that South Korea can use right now is to redouble their relationship with the United States.”

Trump-Kim dialogue still possible

North Korea has a tendency to increase provocations in a U.S. election year, CSIS Korea experts said, noting that a series of measures are likely planned up until November, but the North is demonstrating that it still wants to keep the door open for dialogue with President Trump.

“It’s almost guaranteed that Kim will do something provocative against Washington as well. This is an election year,” said Sue Mi Terry, CSIS Korea chairwoman and a former intelligence officer.

Terry said provocations could include unveiling a new strategic weapon, Kim Jong Un’s promised “Christmas gift” that has yet to materialize. Other options short of nuclear tests include demonstrating advanced missile technologies or further testing of submarine-launched missiles, a demonstration of North Korea’s promise to increase its nuclear deterrence.

“It is very probable that they will soon dial up pressure with Washington after they are done with South Korea,” she said. “I think now, Kim has calculated that it is better to deal with President Trump’s second term or Biden’s first term.”

Dialing up pressure means leverage in a future return to diplomacy, she assessed.

Dr. Victor Cha, former National Security Council Asian affairs director in the George W. Bush administration, believes the North will be careful not to close the door for negotiations with Trump.

“There has not been direct criticism of Trump,” he said. “Maybe they’re trying to preserve the Kim Jong Un-Trump channel if he were to get reelected in November.”

Cha added that difficult conversations with China are necessary to ensure that the country maintains sanctions against North Korea.

All the experts who spoke Wednesday agreed that new hard-line statements by Kim Yo Jong, the sister of the North Korean leader, are setting her up for some sort of leadership role while her brother’s health issues remain a mystery.

“Her influence is definitely growing,” said Terry. “The shifting of her to more of a substantive role [than] just carrying pens and ashtrays and helping craft her brother’s persona.”

Brooks agreed: “Kim Yo Jong’s elevation is a change, and it is a very visible one — and it is an intentional one.”

The former commander predicted that the next three months, which include a number of important anniversaries related to the Korean conflict, could be markers for a detente.

“There are ample opportunities for us to capitalize on this,” he said. “Keep the pressure there while seeking an opportunity for engagement, which may be in the offing.”

<https://www.washingtonexaminer.com/policy/defense-national-security/former-us-forces-korea-commander-north-korea-needs-to-be-agitated-right-now>

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RFE/RL (Prague, Czech Republic)

NATO Chief Tries to Reassure Allies After U.S. Announces Plan To Decrease Forces In Germany

By RFE/RL

June 17, 2020

NATO’s chief says that the United States intends to consult with allies on plans to draw down U.S. forces in Germany, plans that have rattled some members of the 30-member alliance.

NATO Secretary-General Jens Stoltenberg also said that the alliance had no intentions to deploy land-based nuclear missiles in Europe, even as Russia deploys missiles that Washington says violated a key Cold War-era arms treaty.

Speaking to reporters following a June 17 meeting of alliance defense ministers, the NATO chief said the subject of the U.S. plans for decreasing its troop numbers in Germany came up for discussion.

He said U.S. Defense Secretary Mark Esper spoke with NATO allies via video conference, and indicated that Washington would consult them on the next steps of the intended drawdown.

Earlier this month, U.S. President Donald Trump surprised many allies when he announced a plan to cut troops based in Germany by a third, to 25,000.

Trump said he was cutting troops to punish Germany, accusing Berlin of not contributing enough to the alliance. Germany has denied Trump's assertions, and has pledged to increase defense spending but won't meet agreed-upon targets for several years.

"I welcome the fact that Secretary Esper in the meeting with NATO defense ministers was clear both on the U.S. commitment [to Europe] but also that the U.S. will consult allies on the way forward," Stoltenberg said.

"No final decision has been made on how and when to implement the U.S. plan," he said.

Stoltenberg also said some allies were spending more on nuclear deterrence capabilities, in response to what many members see as increasingly aggressive moves by Russia.

The U.S. accused Russia of building, then deploying, missiles in violation of the 1987 Intermediate-Range Nuclear Forces treaty.

Last year, the Trump administration announced it was withdrawing from the pact, leading to the agreement's collapse.

"We will maintain our deterrence and defenses, but we will not mirror Russia," he said. "We have no intention to deploy new land-based nuclear missiles in Europe."

<https://www.rferl.org/a/nato-stoltenberg-reassure-allies-washington-announces-plan-decrease-forces-germany/30676449.html>

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COMMENTARY

Bulletin of the Atomic Scientists (Chicago, Illinois)

Why a Decision on a Second US Plutonium-Pit-Production Factory Should Be Delayed

By Frank von Hippel

June 12, 2020

The National Nuclear Security Administration (NNSA), the organization within the Energy Department that is responsible for producing and maintaining US nuclear warheads, is moving forward with a plan to build a plutonium-pit-production factory at DOE's Savannah River Site in South Carolina. "Pits" are the form of the plutonium in the fission trigger "primaries" of US two-stage nuclear warheads.

The primary motivation for this move is lack of confidence in the pit-production capacity at Los Alamos National Laboratory, which has been responsible for preserving US pit production expertise since production at the Rocky Flats Plant outside of Denver shut down at the end of the Cold War. There are also political motivations, including filling the jobs gap at the Savannah River Site resulting from the collapse of NNSA's effort to build a Mixed-oxide Fuel Fabrication Facility there to process some of its excess Cold War plutonium pits into power reactor fuel.

NNSA's rush forward may result in a debacle on top of a debacle. If the experts at Los Alamos can't manage pit production there, why does NNSA think that they can design and train the staff to operate a pit-production facility at the Savannah River Site?

Also, the United States need for pits is unclear at the moment. In 2007, the pits produced at Rocky Flats—now 30 to 40 years old—were pronounced to be good for at least a century and, in 2012, the Lawrence Livermore National Laboratory upped the durability estimate to 150 years. NNSA did not support the necessary research to solidify this conclusion, however—an oversight that it now promises to remedy.

The NNSA also claims that it needs to produce new pits for two types of safer primaries for two new nuclear warheads, but there seem to be enough already-existing pits for one of the warheads, and the design for the second has not yet been decided.

Thus, there are multiple arguments for delaying a decision on the proposed second pit-production facility for a decade or so. By then, Los Alamos should have mastered the production of pits, the longevity of the legacy pits will be better established, and the need for pits not available in the legacy stockpile should be clarified.

Pits, the critical components. Each US nuclear warhead contains a miniature advanced version of the Nagasaki nuclear bomb weighing only about two percent of what the original Nagasaki bomb weighed. This "primary" is built around a hollow shell of plutonium, which is surrounded by chemical explosive.

If that explosive is triggered, the pit will be imploded rapidly into a spherical solid mass compressed to perhaps twice the normal density of plutonium. Near the point of maximum density, before the plutonium begins to bounce back to its normal density, a small neutron generator will spray it with a burst of neutrons that will initiate exponentially multiplying fission chain reactions. Within a microsecond, about 20 grams of the plutonium will fission, releasing energy equivalent to the explosion of about 300 tons of TNT, heating the material in the primary to about a million degrees Centigrade.

At that temperature, fusion reactions will occur in the several grams of tritium and deuterium that were injected into the hollow pit just before the implosion. Those fusion reactions will produce an intense burst of neutrons that fission hundreds more grams of plutonium, “boosting” the energy of the fission explosion to the equivalent of about 10,000 tons of TNT, half the power of the Nagasaki bomb.

At that point, the primary will be so hot that its glow will be mostly X-rays that will fill the “radiation case” surrounding the primary and a secondary nuclear explosive nested next to it. The X-rays will vaporize the outer layer of the “secondary,” imploding and heating it and igniting a mix of fusion and fission reactions that, depending on the warhead, will release from a few times to 25 times the energy of the Nagasaki bomb from a warhead about one-twentieth the weight of the 4.4 ton Nagasaki bomb.

Will aging pits still work? The last nuclear test of a US primary was conducted in 1992, when Congress imposed a moratorium on US nuclear testing, launching negotiations on the Comprehensive Test Ban Treaty, which the United States signed in 1996. The treaty has not come into force because eight countries, including the United States, have not ratified it; nevertheless, it appears to have moral if not legal force. No country other than North Korea has tested a nuclear weapon since 1998, and North Korea stopped in 2017.

Despite the lack of US testing, there is no doubt that the primaries in US nuclear warheads will implode or that, if the primary works, the secondary will explode. The issues that have been raised relate to whether the plutonium might become brittle and fragment as it implodes, and whether, if that happened, the tritium-deuterium boost gas would ignite. The NNSA spends billions of dollars each year investigating this question with ever-more-refined computer simulations of what happens inside a pit during its implosion and tests of the behavior of aging plutonium under shock, including in subcritical tests in tunnels deep under the former Nevada Test Site.

Every year, the three NNSA weapon labs—Livermore, Los Alamos, and Sandia—and the US Strategic Command, which would deliver most US warheads in a nuclear war, go through an elaborate review process of the condition of the warheads and of the simulations, including by “red teams” of skeptics, before they certify to Congress, via the secretaries of Defense and Energy and then the president, that they are confident the warheads would work and that no tests are required.

During the Cold War nuclear arms race, pits and other weapon components were replaced regularly as one generation of nuclear weapons succeeded another. That evolution stopped with the end of nuclear testing. Today, most of the US warheads have undergone or are going through a “life-extension” process, with most components being replaced. The pits themselves are not yet being replaced, however. The United States has not been making new pits in significant numbers since 1989 when the FBI and Environmental Protection Agency raided the Energy Department’s pit production plant at Rocky Flats outside Denver for environmental crimes. The plant was subsequently razed. (See former Bulletin editor Len Ackland’s 1999 book, *Making a Real Killing: Rocky Flats and the Nuclear West*.)

That the US is not able to replace the pits has become a perennial point of anxiety for the US nuclear-weapon establishment and its congressional overseers. Proposals have been made, but no new pit production facilities have been built—in part because the pits made by Rocky Flats have proven remarkably durable. They are sealed and plated, and they have suffered virtually no corrosion. The main question is whether the emission of “alpha particles” (helium nuclei) by the slow decay of the plutonium is changing the mechanical properties of the material.

In 2005, Congress directed the NNSA’s administrator to commission an independent review of the efforts at the Los Alamos and Lawrence Livermore laboratories to estimate pit lifetimes. The review

was carried out by JASON, a group of experts, mostly academics, who do summer studies on issues of interest to the Defense and Energy departments. An unclassified summary of the group's findings was released in early 2007.

Los Alamos and Livermore had been analyzing the effects of plutonium aging on the functionality of US pits. They also had been doing accelerated-aging experiments on samples of the plutonium alloy used in US pits by spiking them with plutonium-238, which decays by alpha emission with a half-life of 88 years, versus the 24,000 years for the dominant isotope in weapon-grade plutonium, Pu-239.

The summary conclusion of the 2007 JASON report was:

We judge that the Los Alamos/Livermore assessment provides a scientifically valid framework for evaluating pit lifetimes. The assessment demonstrates that there is no degradation in performance of primaries of stockpile systems due to plutonium aging that would be cause for near-term concern regarding their safety and reliability. Most primary types have credible minimum lifetimes in excess of 100 years as regards aging of plutonium; those with assessed minimum lifetimes of 100 years or less have clear mitigation paths that are proposed and/or being implemented.

The JASON report also recommended additional research (pp. 17-18):

to gain experience with Pu that has suffered the equivalent of a century or more of aging (i.e., with accelerated aging), thereby allowing an interpolation rather than an extrapolation in estimating performance changes and degradation due to aging. In particular, one wants to know the modes of failure that will be among the first to appear, because these can inform the stockpile surveillance program in order to make it most sensitive to aging-induced degradation [and] ongoing study of the current accelerated-aging Pu samples, which are spiked with the rapidly-decaying ^{238}Pu , as well as production of samples that have been aged by alternative means. In all of these cases, the objective is to get the equivalent of multi-century experience on aging phenomena, associated with decay (e.g., radiation damage) as well as with activated processes such as annealing."

Some work on accelerated aging did continue and, in 2012, the Livermore lab reported, "no unexpected aging issues are appearing in plutonium that has been accelerated to an equivalent of ~150 years of age."

Livermore's deputy program leader for enhanced surveillance of pit aging stated, "In the near term, the nation can save tens of billions of dollars that might be required to build a new production facility."

Pit-production problems at Los Alamos. In 1999, to maintain US pit-production expertise, the Energy Department instructed Los Alamos to establish pit production capacity of up to 20 pits per year within its large PF-4 plutonium facility. Surprisingly, however, despite the history of Rocky Flats having routinely produced 1,000 to 2,000 pits per year, Los Alamos has struggled to produce a small number of pits, even though the lab has spent billions of dollars on pit-production efforts.

In 1996, the Energy Department tasked Los Alamos to produce 31 "war reserve" pits for the W88, the high-yield warhead for US ballistic missile submarines, for an order that had not been completed because of the shutdown of the Rocky Flats plant. It took 16 years—until 2012—to fabricate the pits. Eleven were produced in 2007 but then a declining number annually thereafter.

The plan was to transition to producing pits for additional W87 warheads for the US Minuteman III intercontinental ballistic missile. In 2013, however, pit production at Los Alamos was shut down because of inadequate worker safety training and concerns about potential plutonium criticality accidents. Seven years later, pit production is still shut down at Los Alamos and the expectation is that this situation will continue until 2023.

NNSA's budget submission for fiscal year 2021 states that Los Alamos is engaged in "activities to hire, train, qualify, and retain required pit production personnel, recapitalization of equipment needed to restore Plutonium Facility (PF)-4's ability to produce War Reserve (WR) [pits,] towards producing the first WR pit during 2023 [and] manage capital acquisitions to increase production capability of PF-4 to produce 10 pits per year."

The cost of the planned upgrades to PF-4 is estimated at \$1.75 billion through fiscal 2025.

Eighty pits per year? In 2008, the departments of Defense and Energy decided that the United States needed a pit production capacity of 50 to 80 pits per year. This range was based on the very rough computation that it would take 30 to 90 years to replace the pits in a US stockpile of 2,500 to 4,500 warheads at that rate. It was assumed that the production could be carried out at Los Alamos.

But Los Alamos continued to flounder. In 2014, Congress backed the goal of 50 to 80 pits per year with a "sense of Congress" statement (which does not have the force of law) backing a requirement of a production capacity of 30 pits per year by 2026 and a demonstration over 90 days during the following year of a production rate of 80 pits per year. In 2019, the date of that goal slipped to 2030, but, in the Defense Authorization Act of 2020, Congress added the message that "any further delay to achieving a plutonium sustainment capability to support the planned stockpile life extension programs will result in an unacceptable capability gap to our deterrent posture."

The Trump administration's 2018 Nuclear Posture Review – which also does not have the force of law – turned these various assertions into a requirement for an "enduring capability and capacity to produce plutonium pits at a rate of no fewer than 80 pits per year by 2030."

Two pit production facilities? After an initial expenditure of \$7 billion on construction of a Mixed Oxide Fuel Fabrication Facility at the Savannah River Site to fabricate excess Cold War plutonium into reactor fuel, the cost continued to grow: It was estimated that the cost to completion of that NNSA project had climbed to \$30 billion—for a program that Congress had originally been told would cost \$2 billion. Congress voted to shut the project down and, in early 2018, the Trump Administration agreed, raising the question of what to do with the fortress structure that had been built and how to compensate the South Carolina delegation—especially its powerful leader, Sen. Lindsey Graham—for the loss of jobs the cancellation of the MOX plant entailed.

In this context, the idea was born to divide the pit-production mission between Los Alamos and Savannah River.

In 2018, the Defense Department and the NNSA issued a joint statement asserting that there would be two pit-production facilities: one at Los Alamos producing "at least 30 pits per year" and one at Savannah River producing "at least 50 pits per year." In this way, the 2008 goal of demonstrating a production capability of 50 to 80 pits per year at Los Alamos had 10 years later become a minimum combined production rate of 80 pits per year at Los Alamos and Savannah River.

Updating the pit durability estimate. Meanwhile, the question remained as to what a decade of additional research at Los Alamos and Livermore had revealed about the lifetimes of the legacy pits.

In March 2018, the Senate Appropriations Committee, in its report on the Energy and Water Appropriations Act for fiscal 2019, directed the NNSA administrator to contract with JASON to do an update on its 2007 report on expectations for the longevity of the Rocky Flats legacy pits. The instruction was that JASON should be contracted to "assess the efforts of the NNSA to understand plutonium aging and the lifetime of plutonium pits in nuclear weapons [and] include recommendations of the study for improving the knowledge, understanding, and application of the fundamental and applied sciences related to the study of plutonium aging and pit lifetimes, an estimate of minimum and likely lifetimes for pits in current warheads, and the feasibility of reusing

pits in modified nuclear weapons. The report shall be submitted in unclassified form but may include a classified annex.”

The Senate instructed the NNSA administrator to “make available all information that is necessary to successfully complete a meaningful study on a timely basis.”

A year and a half later, in November 2019, after a near-death experience at the hands of the Trump administration, JASON submitted a three-page letter report informing Congress that it could not update its previous estimate because, “in general, studies on Pu aging and its impacts on the performance of nuclear-weapon primaries have not been sufficiently prioritized over the past decade. A focused program of experiments, theory, and simulations is required to determine the timescales over which Pu aging may lead to an unacceptable degradation of primary performance.”

The JASON letter also suggested that, contrary to Congress’s instruction, NNSA had not cooperated adequately with the review: “The labs briefly presented their program to address Pu aging to JASON. The plan seemed sensible, but a detailed JASON assessment would require additional information about the program as well as technical details.”

Laudably, NNSA was embarrassed and, in April 2020, administrator Lisa E. Gordon-Hagerty informed the chairman of the Senate Armed Services Committee Subcommittee on Strategic Forces that her agency planned to fund a second phase of the JASON study during the summer of 2020 to “[a]ssess the need for the full study, and if deemed necessary and timely, perform a more detailed, multi-year JASON study.”

The letter also stated that “NNSA has launched an enhanced program focused on understanding the potential effects of plutonium radioactive decay, or aging, on pit performance.”

Other needs for new pits? In addition to the potential need to replace pits because they are aging, NNSA also is advocating the new production facility to produce pits “with enhanced safety features to meet NNSA and DoD requirements.”

This quest goes back 30 years, to the launch of the Stockpile Stewardship Program by the Clinton Administration. At the time, the weapon labs proposed to replace the W78 ICBM warhead and the W76 and W88 submarine-launched ballistic missile (SLBM) warheads with new warheads containing “insensitive” high explosive. That proposal has been sustained over the decades since through a number of incarnations, including proposals for warheads that would be “interoperable” between the ICBMs and SLBMs.

The purpose of insensitive high explosive is not to reduce the probability of an accidental nuclear explosion. Other elements of the safety design are supposed to do that, and, to date, no warhead accident has resulted in a nuclear yield.

The benefit from the use of insensitive high explosive would be to reduce the number of accidents in which the chemical explosive around a pit is detonated and plutonium is dispersed. There were many such accidents involving aircraft-carried warheads prior to the decision not to fly nuclear-armed aircraft in peacetime. The most famous was the collision of a nuclear-armed B-52 strategic bomber with its refueling tanker over Spain in 1966, which resulted in a large area of plutonium contamination on the ground, requiring 1,600 US military personnel to be deployed for up to 12 weeks, working with minimal protection, gathering contaminated dirt and crops into barrels for shipment back to the US for burial on the Savannah River Site. The Navy has had no such accidents with its SLBM warheads, however, and believes that reducing the risk significantly would require redesigning its Trident missile as well as their warheads. It therefore has in the past not been willing to invest in adapting new insensitive high explosive warheads to its missiles, a process that would include flight tests.

It appears, however, that the Navy has finally acquiesced or been overruled on this matter, and the plan is to replace its two SLBM warheads, the W76 and W88, with new warheads that use insensitive high explosive.

The current proposal is to build two new warheads. The first is the W87-1, which would replace the W-78 on the “Ground-Based Strategic Deterrent,” the successor to the Minuteman III missile, and potentially also the W-88, the high-yield warhead on the Trident II submarine-launched ballistic missile. A second warhead, sometimes referred to as the W93, would replace the W76.

The pit of the W87-1 would be identical to the pit of the W87-0, which is currently deployed on the Minuteman III, and is to be used on the Ground-based Strategic Deterrent. The 400 Minuteman IIIs are to be replaced one-for-one with the new ICBM, which, like the Minuteman III, is to be deployed with only a single warhead per missile.

The Defense Department reportedly has 540 W87-0s in stock, of which 200 are deployed on the Minuteman III along with 200 W78s. Therefore, the W78s could be replaced with stored W87s. The department wishes, however, to preserve the option of loading more warheads onto the new Ground-Based Strategic Deterrent, in case of a breakdown in nuclear arms control with Russia. This has been called a “warhead upload hedge” since the Clinton administration. To load up 400 of the new missiles with three warheads each would require 1200 warheads, which would require more W87-1s and therefore more pits.

No realistic circumstance that would require uploading the US ICBMs has been suggested, however. The Joint Chiefs reportedly informed President Obama that they could cover all essential targets in potential adversary nations with one third fewer warheads than the 1,550 counted warheads that are allowed by New START. Further, Minuteman IIIs were downloaded to one warhead each after the end of the Cold War to make the deterrent relationship with Russia more stable. After the downloading, destroying one US warhead in a first strike would, on average, require more than one Russian warhead.

Beyond those arguments against uploading, many respected defense experts, including former Defense Secretary William Perry, argue that the US should abandon fixed land-based ICBMs altogether, because Strategic Command insists on keeping them in a dangerous launch-on-warning posture.

Little firm information has been made public about the design of the proposed W93 warhead for submarine-launched nuclear missiles. In fact, NNSA’s Fiscal Year 2020 Stockpile Stewardship and Management Plan describes “the Next Navy Warhead,” as “not yet an established program of record.”

An anonymous “senior defense official” has offered the reassurance, however, that the W93 would be “previously nuclear-tested designs, it’s not going to require any nuclear testing.” This must mean that a previously tested insensitive high explosive primary would be used.

In 1990, in hearings before the Senate Appropriations Committee’s Subcommittee on Energy and Water, the Energy Department’s then Deputy Assistant Secretary of Energy for Military Applications listed all US nuclear warheads with insensitive high explosive, including warheads that had been produced and deployed and some that had been tested but not deployed as a result of the end of the Cold War. The candidate warhead that has been discussed for three decades is the W89, one of the warheads that was tested but not produced. The W89 was to use recycled pits. According to one report, the pits were to be from the W68, a previous-generation SLBM warhead for which thousands of pits were produced during the 1970s. If that option were pursued, and the W68 pits were found to be still functional, no new pit production would be required.

The decision on the second pit production facility can wait. NNSA could announce its decision to move forward on building a pit-production facility in South Carolina as early as September. Based on the above context, this decision should be delayed for a number of reasons:

1. Since the Savannah River Site staff has no experience with pit production, the facility would have to be designed and the staff trained by the Los Alamos group. But the Los Alamos group has not yet demonstrated that it can design and staff its own pit production facility.
2. Within a decade, we should have a new lower limit on the functional lives of the legacy pits. If they will indeed last for at least 150 years, as the Livermore experts concluded, then there will be no need for a large production facility to replace them anytime soon. The Los Alamos facility, if it can be made operational, should be sufficient for some decades.
3. The argument for producing additional warheads with insensitive high explosive for the Minuteman III replacement is very weak, and the debate over the need to produce new pits for a warhead to replace the W-76, the most numerous warhead in the US operational stock (about 1,500) cannot be made until NNSA and Defense Department are ready to discuss what pit they would use in the W93.

We can wait for another decade before we decide on whether the United States requires two pit production facilities. Indeed, we can wait for another decade before we decide on whether we need any new pits at all.

<https://thebulletin.org/2020/06/why-a-decision-on-a-second-us-plutonium-pit-production-factory-should-be-delayed/#>

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Defense One (Washington, D.C.)

Look at Great Power Competition Through a Special Operations Lens

By Kevin Bilms and Christopher P. Costa

June 18, 2020

Recent events in Crimea, Syria, Libya—even the COVID-19 pandemic— show that state adversaries compete with the United States deliberately below the threshold of intensity likely to escalate to conventional war. Success in great power competition, therefore, requires more than preparation for conflict and high-intensity warfare. Instead, it demands an immediate focus on building global influence, credibility, and legitimacy. In other words, Washington must emphasize the human element of competition before hostilities occur.

Such competition is inherently focused on people. This is the traditional wheelhouse of Special Operations Forces (SOF) and the center of the U.S. military's expertise in population-centric aspects of competition, despite its predominant post-9/11 focus on direct action in counterterrorism. As a result, our nation's reorientation towards global competition should be informed by several key SOF principles.

First, emphasize a clear unity of purpose. Since 9/11, the U.S. government has developed closely integrated teams at the tactical and operational levels to meet critical counterterrorism objectives. These task force structures are flat, agile, bring together diverse interagency tools and authorities, and remain laser-focused on a specific outcome. Strategic and national policymakers must adopt this mentality for great power competition.

What this could look like: The National Security Council could convene departments and agencies to provide representatives to examine SOF's integrated task force models against a specific challenge, and apply these models for strategic competition short of armed conflict. Such an examination should be unrestricted in its review of available resources, authorities, and partnerships that could be brought to bear. In doing so, recommendations may break artificial siloes among departments and agencies, enabling and empowering national security professionals to pursue innovative and creative strategic approaches at the speed of operations and with fewer bureaucratic constraints.

Second, leverage the United States' formidable global network of allies and partners. The SOF community has honed its by-with-through approach to counterterrorism, including with proxies and non-traditional partners. As partners and allies similarly grapple with the implications of a rising China and reasserted Russia, closer partnership with Washington would allow these nations to share the costs of countering malign activities, to more effectively compete before conflict, and to compound the effects of their actions alongside the United States across all levels of government and society. Close coordination and increased integration with its global network would position Washington to work by-with-through willing partners and disrupt destabilizing disinformation, predatory economics, and other subversive activities whose consequences transcend a single nation's borders.

More broadly, U.S. policymakers must nurture and add to these relationships. If the United States prioritizes remaining the preferred partner, it will boost its own partners' efficacy while denying adversaries new allies. If not, it will learn that a network of allies and partners is neither preordained nor self-sustaining.

What this could look like: U.S. missions abroad already host numerous government officials across all departments and agencies within the U.S. government. Less commonly, U.S. officials embed and integrate alongside government officials in the relevant ministries of key partner and allied nations, particularly ones under pressure from adversaries.

The United States should seize opportunities to advise and assist partners, helping them to bolster their whole-of-government national resilience while preserving Western influence and deterring adversaries' advances. Depending on the challenge facing a given nation, this support could range from identifying and disrupting disinformation or election interference, to countering state-sponsored transnational organized crime and illicit finances. In doing so, the United States could maintain its international legitimacy and credibility as a trustworthy partner; build partners' and allies' abilities to compete; share the costs of competition; and secure desirable outcomes with a smaller U.S. footprint and less direct investment.

Third, seek an exquisite understanding of the competitive landscape. Central to the SOF mission is to secure access and placement, prepare the operating environment, and understand local conditions in order to present informed options in event of crisis. Given the centrality of "hearts and minds" in competing for influence and legitimacy, this gives way to offensive and defensive applications.

Offensively, this focus would allow the United States and allies to identify an adversary's missteps and strategic vulnerabilities, and exploit their weaknesses to secure objectives at lower costs. Defensively, close proximity to vulnerable populations would provide warning and indicators of an adversary's malign activities, allowing the United States to mobilize with partners against the threat.

What this could look like: U.S. policymakers should focus scarce personnel and materiel on the contested regions where adversaries are conducting grey-zone activities, including the Greater Sahel, sub-Saharan Africa, Central Asia, and Southeast Asia. This does not mandate universal

American presence or an unnecessary risk to force. Instead, prioritizing the civil domain is required. U.S. diplomats, military personnel, and other officials must assiduously forge the relationships and build long-term human networks necessary to enable follow-on actions. Only with unvarnished ground truth can the United States understand local motivations, craft effective messaging that resonates with the target audience, and identify early trends of shifting public or political opinion that may indicate attempts by an adversary to subvert a partner nation—and quickly develop options to mitigate these challenges.

Finally, have a bias towards action. The impetus to act does not rest on a catastrophic beginning sequence imposed by an adversary. Nor does it imply the need to wait for contact, or hope that conflict never happens. As the National Security Strategy illustrates, a United States successful in competition should never need to go to war. The SOF approach is proactive and determined to solve pressing problems. It recognizes that the United States is a great power and will work with its allies and partners to overcome challenges together.

What this could look like: An approach that resists impulses of “analysis paralysis” and transactional policymaking is imperative, to avoid merely admiring the complexity of great power competition or creating incremental policies detached from a greater strategy. Greater strategic thinking and tactical flexibility are essential to generate effects that shift conditions in the United States’ favor. The SOF community prides itself for emphasizing problem solving skills; if this problem solving is applied to competition—and not focused solely on conflict—the United States may better focus on the challenge at hand, lest a fait accompli to emerges before Washington is forced to take action.

None of this implies that “more SOF” is the answer. Far from it. Rather, the SOF approach is adaptable and provides opportunities to apply creative thinking and whole-of-government solutions to confront the asymmetric threats facing the nation in an era of relentless great power competition.

The views expressed are those of the authors and do not reflect the official position of the Department of Defense or the U.S. government.

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<https://www.defenseone.com/ideas/2020/06/putting-special-operations-lens-great-power-competition/166241/?oref=d-river>

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

America Shouldn't Restart Production of Weapons-Grade Uranium

By Alan J. Kuperman

June 15, 2020

This has been a terrible year for arms control. The United States withdrew from the Intermediate-Range Nuclear Forces (INF) Treaty, announced a withdrawal from the Open Skies Treaty, threatened not to renew the New START treaty limiting long-range nuclear weapons, and reportedly explored the resumption of underground nuclear weapons testing that would violate the Comprehensive Test Ban Treaty (which the United States has signed but not ratified).

Now, to make matters worse, the Department of Energy has announced a plan to restart production of nuclear weapons-grade, highly enriched uranium (HEU) for the first time since 1992. Under a new “strategy to assure U.S. National Security,” the department declared in April a “well-defined future defense need” to produce “highly-enriched uranium needed to fuel Navy nuclear reactors in the 2050s,” when the existing stockpile supposedly will run out.

So, while the U.S. government is demanding that Iran and other countries not initiate production of weapons-grade uranium, we would do exactly that ourselves. It is hard to imagine a policy more damaging to U.S. national-security efforts to stop the spread of nuclear weapons.

Fortunately, this policy disaster could be avoided through technological innovation. As Congress has urged for five years, the U.S. Navy should explore designing its next generation of aircraft carriers and submarines with reactors that run on low-enriched uranium (LEU), which is unsuitable for nuclear weapons, instead of the Navy’s traditional weapons-grade fuel. Not only would this avoid the contentious restart of HEU production, it could prevent other countries like Iran from claiming to require weapons-grade uranium for their navies, and it would reduce terrorism risks at Tennessee’s civilian facility that makes Navy fuel. Such safer LEU fuel is already utilized successfully by the navies of France and China.

Powering the Nuclear Navy on Low-Enriched Uranium

The Navy itself has said that LEU fuel might be feasible, but now opponents within the service have dug in against it, on grounds essentially that, “if it ain’t broke, don’t fix it.” These nuclear Navy officials believe nonproliferation is someone else’s job, so they see no reason to go through the trouble, and possible expense, of changing their fuel.

However, that represents a sharp reversal for the Navy under the administration of President Donald Trump. Previously, in a 2014 report to Congress, the U.S. Office of Naval Reactors had said that an “advanced” reactor system could “allow using LEU fuel” to power Navy vessels. Its follow-up report two years later detailed that, “LEU fuel in an aircraft carrier reactor might meet ship performance requirements in the available size envelope,” and “has the potential to satisfy the energy requirements of an aircraft carrier without affecting the number of refuelings.” If so, existing ships could switch to the safer fuel without even altering deployment schedules.

Submarines face additional limits, including on space and noise, so the 2016 report had said these vessels “would not be addressed until experience could be gained during the development of an LEU-fueled aircraft carrier reactor.” Thanks to Congress, the development of Navy LEU fuel is now underway, so the Navy could start redesigning its next generation of subs in one of two ways to accommodate LEU fuel’s lower energy density. Increasing the reactor size would enable the LEU fuel to last for the life of the ship, as HEU fuel does in our latest subs. Alternatively, a refueling hatch could be added as in France’s nuclear subs, which enables them to be refueled in weeks or less.

Under this plan, the United States could avoid ever restarting production of weapons-grade uranium. The 2016 Navy report observed that, “Development of an advanced naval fuel that uses LEU would demonstrate United States leadership toward reducing HEU and achieving nuclear non-proliferation goals.”

If fuel development went well, the Navy could start using newly enriched LEU in fuel for aircraft carriers in the 2030s, thereby freeing up the HEU stockpile to fuel submarines till the 2070s. Fortunately, most submarines should be able to switch to LEU fuel well before then. The Navy is still only drawing up plans for its next-generation attack submarine, which is slated to deploy in the 2040s, so its design could be tweaked to accommodate an LEU-fueled reactor. The final class of ship to convert to LEU fuel would be our handful of ballistic missile submarines, when a new generation is designed and then deployed in the 2070s.

The total cost to develop Navy LEU fuel over 15 years is \$1 billion, according to the 2016 report. Additional expenses to deploy the fuel are uncertain and would depend on the outcome of the research and development. Potential savings in security costs from avoiding tons of weapons-grade uranium at a civilian facility are also uncertain. However, any net costs would be marginal in comparison to the price tag of constructing the Navy nuclear fleet, which is around \$300 billion, excluding operating expenses.

Congress has backed this plan for five years, appropriating \$40 million to start developing Navy LEU fuel. However, the Trump administration has fiercely resisted, apparently believing that nonproliferation is not worth the effort. In 2018, overturning President Barack Obama’s decision of two years earlier, the energy and Navy secretaries wrote to Congress that, “we have jointly determined that the United States should not pursue Research and Development (R&D) of an advanced naval nuclear fuel system based on Low-Enriched Uranium (LEU).” The administration also refused for several years to initiate the Congressionally funded research, failing to produce its first study until this February and even then claiming that the research and development was not for aircraft carriers and submarines but for obscure purposes like desalination plants.

Follow the Budget

This year’s defense and spending bills, currently being crafted on Capitol Hill, may prove decisive. If Congress increases funding for the Navy LEU program, the administration will have little choice but to accelerate development of that fuel, potentially averting any future need to produce HEU. But if the Republican-controlled Senate Armed Services Committee gets its way by killing the program, the United States inevitably will need to restart production of nuclear weapons-grade uranium, undermining nonproliferation and thereby increasing the risk of nuclear war.

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<https://warontherocks.com/2020/06/america-shouldnt-restart-production-of-weapons-grade-uranium/>

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ASPI (Barton ACT, Australia)

What Japan's U-turn on Aegis Ashore Says about US Alliance Management

By Benjamin Schreer

June 18, 2020

Without informing its US ally, Japan this week abruptly put on hold the planned deployment of two Aegis Ashore systems that were intended to bolster its defences against North Korean and Chinese missiles. Some commentators were quick to denounce the decision, arguing it would reduce Japan's defence capability and strain the US–Japan alliance.

Not only are those risks overstated, but Tokyo's action is also prudent for domestic, operational, strategic and alliance-management reasons. In fact, it's crucial in what it says about Japan's emerging response to a new strategic environment and the flawed approach to allied 'burden-sharing' under President Donald Trump.

Japan approved plans to purchase two Aegis Ashore systems at the end of 2017. A land-based version of the ship-based Aegis ballistic missile and air defence system, Aegis Ashore is capable of operating Standard Missile 3 and Standard Missile 6 interceptors.

The acquisition was seen by some analysts as a milestone in a more robust Japanese defence posture against North Korean and Chinese missile threats. Pyongyang's launches in August and September 2017 of two nuclear-capable Hwasong-12 intermediate-range ballistic missiles over Japanese territory appeared to demonstrate the necessity for such systems. But the decision was also an attempt by Prime Minister Shinzo Abe's government to accommodate Trump's pressure for greater burden-sharing in the early days of his administration.

However, since then the program has run into domestic problems. Severe local opposition to Aegis Ashore in Akita, in Japan's north, led the Abe government to scrap plans to deploy it there last month. Yet, the second planned site in the southwestern prefecture of Yamaguchi had also already met with residents' disapproval.

The program's price tag has ballooned from an estimated US\$2.15 billion in 2017 to more than US\$4 billion. And Tokyo was reportedly not informed that it would have to pay for missiles launched in Hawaii to test the system's radar. Finally, the Abe government says it only learned in May that significant technical modifications would be required to reduce the risk of the rocket booster falling into populated areas. Domestically, therefore, putting the Aegis Ashore procurement on ice ends a political liability for the Abe government.

It's also sensible to forgo the Aegis Ashore deployment from a Japanese operational and strategic perspective. Despite what ballistic missile defence enthusiasts might claim, it's a defensive, static land-based system whose effectiveness against a sophisticated missile threat from China or North Korea is highly questionable.

Japan's expensive preoccupation with missile defence systems has already put a heavy burden on its navy's Aegis destroyers, which nevertheless should still be able to cope with a potential North Korean attack.

But to better deal with the emerging military challenge from China, which is the real problem for Japan, its defence force would be far better off investing in more flexible offensive capabilities designed to complicate China's (and North Korea's) planning and operations, including mobile strike systems, hypersonic missiles, space assets and submarines. Rather than pursuing Aegis Ashore in a 'sunk cost' approach, the Japan Self-Defense Force could now reinvest the money in other, more urgent capability areas.

Japan's decision also sends a clear message to the US about its position on future alliance relations. The Trump administration's relentless insistence that Japan pay more for hosting US troops on its territory in exchange for protection is likely to have unintended consequences.

Tokyo has undoubtedly been watching Washington's attempts to push both its South Korean and German allies around through blatant public threats about troop withdrawals if they don't increase their defence spending. This approach is based on a fundamental misunderstanding: US allies, including Japan, are acutely aware that in the emerging strategic competition with China and Russia, America needs its allies more, not less. Repeated public US demands to 'do more' are no longer sufficient to persuade or even coerce allies, if they ever were.

Tokyo has learned by now that appeasing Trump through the purchase of expensive defence equipment such as Aegis Ashore and the F-35 fighter hasn't worked. Instead, he has come back to ask for more.

But in this new strategic environment and in the context of upcoming negotiations with the US about Japan's 'host nation' support, Tokyo is likely to take a harder line. The Aegis Ashore system could then be used as a bargaining chip for Tokyo in discussions about future burden-sharing within the alliance. Alternatively, Japan could offer its financial and technical cooperation to the US on other military systems of interest.

As the US will find out, pushing allies to 'do more' comes with a price tag as these nations become more inclined to push for greater autonomy about their defence decision-making, including on weapon systems. Japan is no exception. Indeed, Tokyo's decision to cancel the Aegis Ashore acquisition for now without prior consultation with Washington is very much a case in point.

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<https://www.aspistrategist.org.au/what-japans-u-turn-on-aegis-ashore-says-about-us-alliance-management/>

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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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