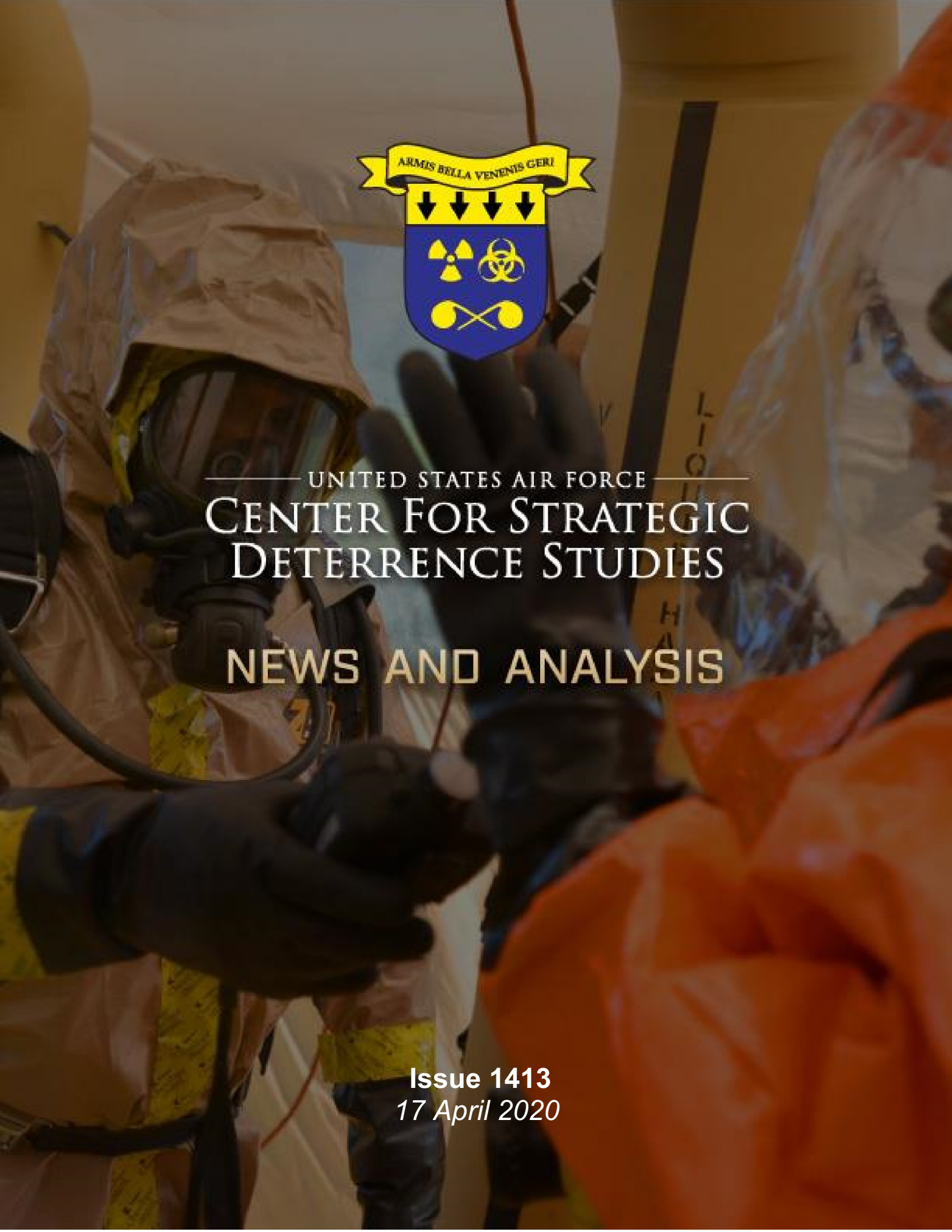


UNITED STATES AIR FORCE

# CENTER FOR STRATEGIC DETERRENCE STUDIES

## NEWS AND ANALYSIS

**Issue 1413**
*17 April 2020*

# Feature Report

***"Renewed Great Power Competition: Implications for Defense—Issues for Congress".*** Published by Congressional Research Service; Updated April 7, 2020
https://crsreports.congress.gov/product/pdf/R/R43838

Many observers have concluded that the post-Cold War era of international relations—which began in the early 1990s and is sometimes referred to as the unipolar moment (with the United States as the unipolar power)—began to fade in 2006-2008, and that by 2014, the international environment had shifted to a fundamentally different situation of renewed great power competition with China and Russia and challenges by these two countries and others to elements of the U.S.-led international order that has operated since World War II.

The shift to renewed great power competition was acknowledged alongside other considerations in the Obama Administration's June 2015 National Military Strategy, and was placed at the center of the Trump Administration's December 2017 National Security Strategy (NSS) and January 2018 National Defense Strategy (NDS). The December 2017 NSS and January 2018 NDS formally reoriented U.S. national security strategy and U.S. defense strategy toward an explicit primary focus on great power competition with China and Russia. Department of Defense (DOD) officials have subsequently identified countering China's military capabilities as DOD's top priority.

The shift to renewed great power competition has profoundly changed the conversation about U.S. defense issues.

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# TABLE OF CONTENTS

**COMMENTARY**

- Toward a New Theory of Power Projection (War on the Rocks)
  "The U.S. effort to support the deterrence of a major war has played an important role in sustaining peace since 1945 and can continue to do so — but it is time for a major shift in how the United States plans to fulfill this critical military mission."
- Norway's Allies Share Their Views on the Country's New Defense Plan (Defense News)
  "The collapse of the Intermediate-Range Nuclear Forces Treaty in 2019 brings an increased threat from medium-range ballistic missiles, requiring Norwegian and allied defense planners to adjust to new threats to the homeland and region."
- Expect a Surge in North Korean Missile Tests, and of Greater Range (Defense News)
  "There is zero reason we should assume North Korea has limited its research and development activities to its short-range systems."

# NUCLEAR WEAPONS

National Defense (Arlington, Va.)

**Air Force Wants to Add More Long-Range Bombers to its Inventory**

By Connie Lee

April 9, 2020

The Air Force wants "just north" of 220 long-range bombers in its inventory by 2040, a service official said April 9.

Previously, the service said it wanted 175 aircraft in the current fleet, but "that was a programmatically derived approach," Gen. Timothy Ray, head of Air Force Global Strike Command, told reporters during a call with reporters.

"There are multiple ways to get to that particular path," he said. "For where we are, we think the longer-range capabilities with longer-range cruise missiles is where we want to go."

The Air Force has been looking to improve its fleet by purchasing the upcoming B-21 Raider and modernizing the Boeing B-52 Stratofortress.

To reach 220, the service will continue focusing on adding capacity to the B-52 and sustaining the B-1 Lancer. However, the Air Force is still examining how many B-21s and B-52s will make up the final number, he noted. Officials have said over the course of the development program that the Air Force intends to build 100 B-21s.

"I have to set the conditions over the next couple of years and even my replacement will have to work through … the considerable chore to set those conditions," he said. "I believe we're probably four or five [years] away from being able to pop what that plan will look like specifically."

The B-1 bomber may also be used to advance the service's hypersonic weapons efforts, he noted.

Ray told Air Force Magazine this month that officials may use the platform to carry the future Airlaunched Rapid Response Weapon. Earlier this year, the service chose to move forward with ARRW instead of the hypersonic conventional strike weapon.

"I see there an opportunity to take on that hypersonic mission faster for us inside the bomber fleet," he said.

Meanwhile, the schedule for the B-21 Raider is still up in the air. Randall Walden, director and program executive officer for the Air Force's Rapid Capabilities Office, said last year the service is not likely to achieve its original goal of reaching first flight in 2021. Ray declined to comment on whether or not COVID-19 challenges could bring schedule changes and delays.

"Anything I tell you today may not be a valid point two weeks from now," he said. "We're going to go through arguably the toughest several weeks in our nation's history since the second World War." "We're flying a little less, but we're flying what we need," he added.

https://www.nationaldefensemagazine.org/articles/2020/4/9/air-force-increases-need-for-morelongrange-bombers

Return to top

Air Force Magazine (Arlington, Va.)

**Goldfein on How USAF Is Generating Airpower in the 'New Abnormal'**

By Brian W. Everstine

April 15, 2020

The impact of the new coronavirus outbreak has been mixed for USAF flying units, with many close to the fight maintaining a high operations tempo, while training at home takes a major hit that could have lasting impacts to readiness. However, the service has faced similar cutbacks before and will be prepared to bounce back, Chief of Staff Gen. David Goldfein told Air Force Magazine in an April 15 interview.

The spread of COVID-19 forced a reset across the Air Force, beginning with a report from all major commands to service leadership on what tasks are mission essential and others that can be curtailed.

"The first thing we did was we identified the key missions that we know we will get no relief on, nor should we expect relief when it comes to defending the homeland and doing those other critical missions," Goldfein said.

Those critical missions include:

- Nuclear deterrence and related support
- Ongoing combat operations, including sustained intelligence, surveillance, and reconnaissance
- Continued cyber operations

- Standing up the Space Force

"So we identified the missions that we know we have to continue and then the ask was: OK, how do you build the breadth and depth to be able to sustain operations even if there's an outbreak?" he said. "We've adjusted operations in the nuclear missile fields, we've adjusted operations in our command and control headquarters, we've made adjustments in how we maintain space operations. … We're operating in what we call the new abnormal, operating with the virus."

For nuclear operations, missileers have dramatically changed their alert procedures. Typically, a nuclear crew would go on about eight alerts per month for about two to three days each time. But that timeline has been increased so missileers are now in the field for 14 days or more.

"We're continuing to adjust our operations, so that we're adhering to [Centers for Disease Control and Prevention] protocols at the same time," he said. "And operations continue unabated."

Air mobility is another mission that must continue, with an operations pace that has increased amid the coronavirus outbreak. Crews flying these missions essentially remain in a "bubble," flying a mission in a clean cockpit, moving to their rooms with no contact with others, and then returning to the plane.

"So global mobility continues unabated," he said. "And I expect, actually, the demand signal for global mobility to go up in the weeks ahead. It will not go down."

The pace of flights is high at forward locations, such as Bagram Airfield, where Airmen continue to support the combat mission there in Afghanistan, or at Kunsan Air Base, South Korea, where "fight tonight" forces cannot have degradation. However, other bases and commands that don't have as much of an urgent operational need, like Air Education and Training Command, have seen their flying hours cut back by approximately half.

The service also is closely watching the impact of the outbreak on its depots.

"Our civilian workforce in the depots are just magicians," Goldfein said. "They keep 58-year-old airplanes flying. I mean, it's just magic what they do, but they also tend to be an older population, so therefore at greater risk."

Air Force Materiel Command is adjusting depot operations to limit the potential future impact on aircraft availability and the status of aircraft modification, which in turn has future impacts on the flying hour program, Goldfein said.

On a smaller scale, the service has seen similar issues before. For example, maintenance-related stand downs with the B-1B fleet in recent years impacted the service's ability to keep pilots current and maintain overall readiness.

"Though we've not been through a global pandemic before, we have been through times where we've had to ground fleets for some period of time because of a maintenance action, and then have to reconstitute that fleet," he said. "And so, we actually have some good templates and we know how to do this."

The service also saw major impacts to its flying operations when sequestration was implemented in 2013. Those broad, across-the-board cuts are still having impacts on USAF readiness today, Goldfein said. However, the recovery has produced some lessons learned "in terms of how we eventually got back up on the step," he added.

"But I would say that there are more current examples … of maintenance groundings and what have you that we've been through, where we've had to reconstitute and rebuild readiness, and so that muscle memory is not too far back," Goldfein said.

The Air Force on April 13 made a major public show of its readiness in the Pacific. Four B-52s, along with KC-135s, an RQ-4 Global Hawk, and U.S. Navy aircraft conducted an "elephant walk" at Andersen Air Force Base, Guam, to show USAF can launch the heavy bombers and support aircraft on short notice. Steps like this are important for Americans, and the world, "to know that its Air Force is up and operating, and this would be a dangerous time to even consider taking us on," Goldfein said. "We can generate airplanes. We can generate air power. We can generate space power."

The exercise gave Airmen a chance to work in a high-pressure situation amid the pandemic. Despite social distancing rules and CDC guidelines, air traffic controllers, pilots, maintainers, weapons loaders, etc., had to get those airplanes ready.

"There's 1,000 fingerprints on an aircraft that gets airborne, and so every one of those operations has got to be modified and adjusted," Goldfein said. "And so, we learn, and we do an elephant walk. How do you do air traffic control in a COVID environment? How do you build weapons in a COVID environment? How do you refuel aircraft, and operate a fuel truck? These are all things that we're modifying real time, and so it's a great exercise to ensure that we can continue to produce airpower despite the COVID challenges."

https://www.airforcemag.com/goldfein-talks-about-how-usaf-is-generating-airpower-in-the-newabnormal/

Return to top

Defense News (Washington, D.C.)

**Thornberry Wants $6 billion This Year to Launch Counter-China Fund**

By Aaron Mehta

April 15, 2020

WASHINGTON — The top Republican on the House Armed Services Committee will release a proposal Thursday to formally create a new fund to counter Chinese actions in the Pacific, Defense News has learned.

Rep. Mac Thornberry, R-Texas, is calling for the creation of an Indo-Pacific Deterrence Initiative (IPDI), with a $6.09 billion invest in fiscal year 2021. The fund would be based on the European Deterrence Initiative, a special DoD fund for projects focused on deterring Russia that was set up in the wake of the annexation of Crimea.

"The Indo-Pacific has been called our highest priority theater and I believe that is true. It is time to put our money where our mouth is," Thornberry told Defense News. "This effort consolidates and funds the policies, infrastructure, and platforms needed to reassure our allies and partners while we deter China. It also serves as a benchmark against which we can judge our efforts in the region. We may not be able to get this all done this year, but it is vital that we make a start."

For several years, members of Congress have questioned if some form of EDI is needed in the pacific. Action was taken in the FY2020 National Defense Authorization Act, with language in Section 1253 requiring INDOPACOM to deliver by mid-March of this year a report detailing what the combatant command needs to fulfill the National Defense Strategy and maintain an edge over China. The hope among supporters was that the list would provide the core of a PDI requirement.

As Defense News reported April 2, INDOPACOM head Adm. Phil Davidson came back to the Hill with a $20 billion wish list covering FY21-FY26, with $1.6 billion requested specifically for FY21.

Thornberry's request for FY21 is obviously significantly higher than Davidson's ask for the same fiscal year, but a Congressional staffer added that Thornberry, who is retiring come January, is realistic that the whole $6 billion request is unlikely to survive the coming budget fights. The goal, the staffer said, is to get something through that creates the IDPI account, in hopes it can grow moving forward.

On that front, Thornberry is likely to find at least some bipartisan support. In a March 24 letter to Davidson, Rep. Adam Smith, the chairman of the House Armed Services Committee, stated that he intends "to identify funding for an Indo-Pacific Reassurance Initiative in the National Defense Authorization Act for Fiscal Year 2021." (The EDI was initially branded the European Reassurance Initiative under the Obama administration.)

While the Section 2153 report helped inform Thornberry's request, the staffer said that work was already underway on the congressman's proposal by the time the report arrived. However, the report's influence can be seen in how the Thornberry plan breaks down into five categories also similar to those laid out by Davidson, as well as in a number of crossover requests.

Increased presence and joint force lethality ($1 billion): The Thornberry proposal would authorize funding for a "permanent and persistent land-based integrated air and missile defense system and associated weapons delivery system on Guam," which Davidson described in the Section 1253 report as his highest priority, one that would cost $1.67 billion over the six year period. (The Thornberry proposal summary viewed by Defense News does not contain breakdowns for individual budget items.)

In addition, the Thornberry proposal would fund a homeland defense radar in Hawaii, another key Davidson request; increase funding for intelligence, surveillance, and reconnaissance capability in the region; maintain rotational forces in the region, including a rotational bomber presence; invest more in underseas warfare capability, and develop long-range precision " develop long-range precision fires systems with a plan to posture the systems throughout the Indo- Pacific region."

Prepositioning and logistics ($1.5 billion): In his Section 1253 report, Davidson wrote that new prepositioning strategies are needed, as "It is not strategically prudent, nor operationally viable to physically concentrate on large, close-in bases that are highly vulnerable to a potential adversary's strike capability…Forward-based, rotational joint forces are the most credible way to demonstrate U.S. commitment and resolve to potential adversaries, while simultaneously assuring allies and partners."

Along those lines, the Thornberry proposal would authorize funding for "contingency regional based clusters prepositioning kits; ship prepositioning and surge capacity; munitions stocks and storage; a movement coordination center to facilitate air and ship transport; and prepositioned forces."

Improved infrastructure ($2.1 billion): Thornberry wants this pot of money for military construction and the acquisition of land along with funding to support the "planning and design of emergent posture requirements for the Indo-Pacific theater."

Included in this pot of money is $10 million for strategic construction planning and design assessments for places that the U.S. currently does not have a footprint in, but likely will need to consider investing in for the future.

Strengthen allies and partners ($350 million): Thornberry wants to increase overall capacity and capabilities of allies and partners in the region, including a new program to "modernize communications architecture and systems with allies and partners;" increasing multilateral

partnerships built around counter-terrorism efforts; increase the use of the National Guard State Partnership Program with countries in the region; help fund security cooperation efforts, including the Indo-Pacific Maritime Security Initiative; and fund the Pacific Partnership program, an "annual multilateral humanitarian and civic assistance and disaster relief preparedness mission conducted in the Indo-Pacific region."

Training and exercises ($1 billion): This funding would increase joint training and exercise between INDOPACOM and its allies and partners overall, including the funding of both joint division level and service-level training and exercise programs.

Notably, it would also require DoD to create a plan for the integration of "all major test and training ranges in the Indo-Pacific Command area of operations to support future joint training and exercises and test operational capabilities and weapons systems to include space and cyber activities." That test range integration was also a feature of Davidson's request.

https://www.defensenews.com/congress/2020/04/16/thornberry-wants-6-billion-this-year-tolaunch-counter-china-fund/

Return to top

Breaking Defense (Washington, D.C.)

**Persistent Regional Drones Could Deter China, Russia: CSBA**

By Theresa Hitchens

April 15, 2020

WASHINGTON: A coherent US and allied strategy to increase the use of drones in regional hot spots could serve as a strong deterrent to gray-zone aggression by Russia and China, says a new study by the Center for Strategic and Budgetary Assessments (CSBA). Implementing a new strategy, which CSBA calls "deterrence by detection," would cost about $1.4 billion annually, the study says.

The study argues that US armed forces are poorly configured to handle potential regional aggression by Russia in Western Europe and by China in East Asia, where both countries are "developing the ability to launch aggression rapidly against states on their periphery under the cover of increasingly capable reconnaissance-strike networks."

Currently, the CSBA study finds, "With only limited warning, Beijing or Moscow could exploit their time-distance advantage to seize allied territory before the United States and its allies could respond, thereby creating a fait accompli that would be difficult to reverse after the fact."

However, DoD does have enough capability by using long-endurance, non-stealthy unmanned aerial systems (UAS), to deploy a persistent "eye in the sky" capability that could reduce the likelihood of either nation pulling off such a stealthy coup. The study, called "Deterrence by Detection: A Key Role for Unmanned Systems in Great Power Competition," argues that all is needed is for the Pentagon to develop "new concepts of operations and organizations to employ those capabilities effectively."

The study lists the following systems as relevant to such a new strategy: Air Force MQ-9 Reapers and RQ-4 Global Hawks, Navy MQ-4C Tritons, and Army MQ-1C Gray Eagles.

Such a new employment concept for UAS would be enhanced by finding ways to allow allied and partner nations to participate coalition operations that could offset US costs, the study finds.

"Real-time situational awareness is critical to countering the twin challenges of sub-conventional gray zone aggression and a conventional fait accompli gambit promptly and effectively," the study explains. "UAS conducting ISR missions could provide increased warning of a pending Chinese or Russian attack, thereby helping to ensure that forward postured forces are prepared to respond decisively. By increasing warning time, UAS would help mitigate the United States' time-distance disadvantage, thereby allowing the United States and its allies to mass sufficient combat power to prevent a fait accompli."

It identifies three priority areas in the Asia-Pacific and three in Europe that CSBA says are best suited for long-endurance unmanned aerial reconnaissance: the Taiwan Strait, South China Sea and East China Sea in the Asia-Pacific, and the Baltics, Black Sea, and eastern Mediterranean Sea in Europe.

CSBA analysis shows that implementing "deterrence by detection" in those priority areas would "require 46 airframes in the Western Pacific and another 46 in Europe, or a total of 92 aircraft."

"The United States and its allies and partners could meet the inventory requirement by shifting existing aircraft from other theaters and missions to the Western Pacific and Europe and by assigning some of the aircraft the United States is already procuring to new missions," it explains.

The authors — CSBA President Thomas Mahnken, Research Fellow Travis Sharp, and Senior Analyst Grace Kim — estimate annual operating costs for those 92 drones would total about $1.4 billion per year, based on Congressional Budget Office figures.

"Since the aircraft would come from the existing inventory, not from new purchases, the operating cost represents money DoD would have spent anyway to keep the aircraft flying (assuming it kept them flying). For this reason, implementing 'deterrence by detection' should not require any spending increases," the study explains.

The study finds that the strategy would tie up only "14 percent of the Air Force's MQ-9 Reapers, 38 percent of the Navy's MQ-4C Tritons, 53 percent of the Air Force's RQ-4 Global Hawks, and 6 percent of the Army's MQ-1C Gray Eagles."

"Indeed, a virtue of the concept is that it employs capabilities that the United States already possesses but that have been underutilized in the context of great-power competition because their value in that context has not been appreciated," the study concludes. "Contributions from allied countries would reduce the burden on the U.S. military and free up UAS for other missions while enhancing allied capabilities."

https://breakingdefense.com/2020/04/persistent-regional-drones-could-deter-china-russia-csba/

Return to top

# US COUNTER-WMD

DVIDS (Atlanta, Ga.)

**ATAK in the Field: Forging a Tactical Edge**

By Defense Threat Reduction Agency's Chemical and Biological Technologies Department April 15, 2020

Through collaboration and innovation, the Defense Threat Reduction Agency has integrated its powerful, hazard-awareness-and-response tools into the Android Tactical Assault Kit (or the Android Team Awareness Kit, ATAK). ATAK is a digital application available to warfighters throughout the DoD. Built on the Android operating system, ATAK offers warfighters geospatial mapping for situational awareness during combat — on an end-user device such as a smartphone or a tablet. U.S. forces use ATAK to self-identify their locations, and their enemy's location, to visually communicate their movements to friendly forces in the area. The software has successfully aided in search-and-rescue and natural disaster responses, such as coordinating the relief efforts following Hurricane Florence. Warfighters can now use ATAK to guide themselves to safety when confronted with a release of chemical and biological agents and radiological and nuclear threats (CBRN).

Warfighters rely on digital maps and other data to guide their mission. However, a mission requires additional data when warfighters are confronted with a release of CBRN. Warfighters need to know the weather conditions in real time (e.g., wind speed and direction, stability, precipitation) to understand the potential for agent dispersal and spread. They also need to know the type of agent released, monitor their personal vitals to assess their exposure to the agent, and find a route to safety. DTRA has digital tools to help warfighters defend against CBRN, but they were often housed as stand-alone applications and not embedded in platforms regularly employed by warfighters outside of the CBRN community.

ATAK can connect to sensors on many platforms (e.g., satellites, drones, smartwatches) and has many plugins that warfighters can download to customize their operating environment, depending on their role or mission. ATAK's software architecture allows plug-ins to share information with other plug-ins or applications on the end-user's device. With DTRA's contribution, ATAK now includes these three CBRN plug-ins: 1) CBRN Effects, 2) CBRN, and 3) Filter Times.

The first plug-in, CBRN Effects, adds two capabilities to ATAK: real-time hazard prediction and vehicle navigation for CBRN events. The plug-in optimizes DTRA's Hazard Prediction and Assessment Capability to run on an end-user device in disconnected (without an internet connection) environments. When the plug-in is connected to the internet, it incorporates DTRA's Meteorological Data Server to provide warfighters with real-time weather — from domestic to global, depending on the mission — to characterize the dispersal and spread of chemical and biological warfare agents following a release. The CBRN Effects plug-in also makes use of an existing ATAK plug-in, the Vehicle Navigation System (VNS). With VNS, the CBRN Effects plug-in offers warfighters a complex routing tool that accounts for contamination and exposure, in addition to travel time, and advises the warfighter on the optimal paths to take for safety.

To add the second plug-in, CBRN, DTRA collaborated with the U.S. Army Comba Capabilities Development Command Chemical Biological Center (CCDC CBC) to implement the U.S. Army's Integrated Sensor Architecture (ISA) into ATAK. U.S. Army's ISA is used across the DoD, so DTRA and CCDC CBC built upon ISA to include sensors to capture CBRN events. ISA seamlessly integrates different sensor technologies to give warfighters the data they seek. For example, ATAK provides a single interface for viewing and controlling different CBRN-sensing technologies, whether that is a wearable smartwatch that measures a warfighter's vitals (e.g., heart rate) or a device mounted on a drone to detect chemical warfare agents.

The third plug-in, Filter Times, addresses what warfighters have long asked for: real-time guidance on how long they should wear masks and assume a mission-oriented protective posture after a CBRN release. ATAK offers this guidance through the Filter Times plug-in, which instructs the

warfighter when to stay near the ground, when to seek immediate help, and when to avoid contamination.

Warfighters positively evaluated the Filter Times and other CBRN plug-ins at the 2019 Chemical and Biological Operational Analysis (CBOA) event, where warfighters evaluated several technology prototypes for their utility in chemical and biological defense. Warfighters reported that the CBRN capabilities in ATAK are useful and easy to use with minimal training.

Overall, the U.S. armed forces and their interagency and coalition partners value ATAK and the common operating picture it provides. DTRA continues to develop CBRN-specific plug-in capabilities to support warfighters on the battlefield.

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https://www.dvidshub.net/news/367459/atak-field-forging-tactical-edge Return to top

Defense News (Washington, D.C.)

**Patriot Missile Defense Systems Now Active in Iraq, Say US Officials**

By Lolita C. Baldor, The Associated Press

April 13, 2020

WASHINGTON — New air defense systems are now protecting American and allied forces at military bases in Iraq where troops have been attacked by Iranian-backed insurgents in recent months, according to U.S. officials.

Patriot missile launchers and two other short-range systems are now in place at al-Asad Air Base, where Iran carried out a massive ballistic missile attack against U.S. and coalition troops in January, and at the military base in Irbil, said officials, who spoke on condition of anonymity to discuss sensitive weapons movement. A short-range rocket defense system was installed at Camp Taji.

The military has been gradually moving the defensive systems into Iraq over the last few months to provide more protection for troops that have seen a series of rocket and missile attacks.

Soon after Iran launched a massive ballistic missile assault against troops at al-Asad in January, questions were raised about the lack of air defense systems at the bases. But it has taken time to overcome tensions and negotiate with Iraqi leaders, and to also locate defense systems that could be shifted into Iraq. Prior to the missile attacks, U.S. military leaders did not believe the systems were needed there, more than in other locations around the world where such strikes are more frequent.

The systems are now operational, as top U.S. officials warn that threats from Iranian proxy groups continue.

Gen. Mark Milley, chairman of the Joint Chiefs of Staff said Thursday that because of that threat, hundreds of soldiers from the 1st Brigade, 82nd Airborne Division, remain in Iraq.

He said only one battalion was allowed to return to Fort Bragg, N.C., “in part because the situation with the Shia militia groups and Iran has not 100 percent settled down.” He added that “they will continue their mission until such time that we think the threat has subsided.”

Several rockets hit near the site of an American oilfield service company in southern Iraq this week. It was the first such attack in recent months to target U.S. energy interests. Americans had already left the location.

President Donald Trump early last week said his administration has received intelligence that Iran is planning a strike. He provided no details, but he warned Iran in a tweet that if U.S. troops are attacked by Iran or its proxies, "Iran will pay a very heavy price, indeed!"

Other officials in recent weeks said there had been an increase in intelligence pointing to a possible large attack. But they said this week that the threat appears to have tapered off, as countries grapple with the rapidly spreading coronavirus.

Still, military leaders have argued that U.S. and coalition troops needed the extra protection because threats from the Iranian proxies continue and it's unclear how much control Tehran may have over them, particularly now as the virus hits Iran hard.

In early January, the U.S. launched an airstrike in Baghdad that killed Iran's most powerful military officer, Gen. Qassem Soleimani, and Abu Mahdi al-Muhandis, a leader of the Iran-backed militias in Iraq. Kataib Hezbollah, one of those militias, has been responsible for a number of attacks on U.S., Iraqi and coalition forces.

The Soleimani killing triggered the Iran ballistic missile attack, which resulted in traumatic brain injuries to more than 100 American troops.

Iraqi leaders, however, were angry over the al-Muhandis killing, and protests around the county had been calling for the withdrawal of U.S. troops. Those conditions made negotiations over the Patriot systems very sensitive.

In addition, Gen. Frank McKenzie, the top U.S. commander for the Middle East, told reporters that moving Patriots and other systems to Iraq was tricky because it meant he would have to take the systems from another location where they were also needed. Officials have not said where the systems in Iraq were taken from.

It also has taken time to move the large systems, piece by piece, into Iraq, assemble them and and link them together.

The Patriot batteries, which are designed to protect against missiles are at al-Asad and Iribil. In addition, the so-called Army C-RAM system is being used and is able to take out rockets and mortars. And the more sophisticated Avenger air defense system can counter low-flying missiles and aircraft, including drones and helicopters.

Trump withdrew from the Iran nuclear deal in 2018 and has steadily reimposed U.S. sanctions on Iran that had been eased or lifted under the terms of the deal. Late last month, the administration slapped sanctions on 20 Iranian people and companies for supporting Shia militia responsible for attacks on U.S. forces.

Currently, there are more than 6,000 U.S. troops in Iraq. While some forces have been withdrawn over the past few months, others have flowed in to set up and operate the new air defense systems.

https://www.defensenews.com/land/2020/04/13/patriot-missile-defense-systems-now-activein-iraq-say-us-officials/

Return to top

Breaking Defense (Washington, D.C.)

**Hypersonics: 5 More Army-Navy Flight Tests By 2023** By

Sydney J. Freedberg Jr.

April 15, 2020

WASHINGTON: "We need to accelerate the pace of testing," the Army's three-star director of hypersonics says. "Fourth quarter FY23 is when the Army builds [this weapon]; that time is coming really fast. [And] we're lucky, because when we woke up on the 27th of December and the Russians publicly declared that they had fielded a similar capability, that really put us on a path to accelerate."

Last year, Lt. Gen. Neil Thurgood took over the Army's reorganized and renamed Rapid Capabilities and Critical Technologies Office (RCCTO), which is now responsible for both offensive hypersonic missiles and missile defense lasers. What kind of acceleration is he talking about?

The weapon that evolved into the Common Hypersonic Glide Body – so-called because it will go on both Army land-launched missiles and Navy submarine-launched ones – has had just four flight tests in nine years. The first, successful flight was in 2011. It took three years to get to the second test, in 2014, which produced no useful data because the booster rocket failed and the glide body never detached. The second successful test took another three years, to 2017; the third test, last month, another three years.

But looking forward, "our next flight test will be in third quarter '21. Then we have additional flight tests in first quarter '22," Thurgood told me. "We have five more flight tests – at least five more flight tests – before we build in fourth quarter '23."

Tests will not only come closer together. They'll also become more demanding.

"We are working to make it more accurate and survive in a more stressful environment," said Thurgood's deputy for hypersonics, Robert Strider. "With every test that we do, we're increasing the test envelope to make sure that it will work as designed."

That initial test in 2011 – using a larger and less refined version of the glide body – was simply about proving the design could survive the flight profile: extreme acceleration from the booster, the heat of air friction as it ripped through the atmosphere, the vacuum of near space, and reentry coming down. The failed 2014 test, and the 2017 test that replaced it, began to explore accuracy, lethality, and other performance characteristics. The future tests focus on fine-tuning the design to perform precisely as the Army and Navy missions require.

"As we hone in further and further on refining our operational outcomes, the [test] objectives become more narrow in their scope," Thurgood told me. "We know over the next five tests exactly the outcomes we need to test to."

In parallel to the flight test program, the Army is also trying to build an industrial base from scratch. All the glide bodies tested so far have been built, one at a time, at the Energy Department's Sandia National Laboratories, which invented the design. That's not a viable model for mass production.

"The glide body technology is solely owned by the government," Thurgood told me. "They're currently produced – 'made' is probably a better word. It's not really a production line – they're really handmade by the great folks out at Sandia. [But] obviously how the great PhDs at Sandia make a thing may not be how we commercially make a thing."

So the Army has contracted aerospace firm Dynetics – whose subcontractors include major players like Lockheed Martin, Raytheon, and General Atomics – to start a private-sector manufacturing line. The companies have teams at Sandia learning how to build the design first-hand from its inventors.

Over time, Dynetics & co. will take the lead. First they'll build a glide body at Sandia under the lab scientists' supervision. Then, about a year from now, Dynetics will start production at their Huntsville, Ala. factory.

Dynetics concept for their Common Hypersonic Glide Body (C-HGB)

Can the Army and its contractors stick to this tight schedule amidst the disruptions of COVID-19? "Right now, I think it's exactly on track where it needs to be," Thurgood told me. "Even in this (COVID-19) crisis we have now, our industry partners are responding really well." By working from home where possible, and breaking up large groups of workers into small ones where hands-on labor is required, the program has so far kept going despite the pandemic.

The other potential disruption is the Air Force's withdrawal from the Common Hypersonic Glide Body program to focus on other, more compact hypersonic weapons that fit better on an aircraft. Even when they were involved, Thurgood told me, their unique requirements required some modifications to the glide body before they could use it. Looking forward, he said, there's also a possibility the Air Force might step back in.

With the Air Force no longer paying a share of the overhead, "it'll change our cost numbers a little bit," Thurgood acknowledged. But it also frees up R&D resources for the Army and Navy.

The Air Force continues to participate in the all-service board of directors governing the Common Hypersonics Glide Body project, he said.

The current membership:

Thurgood, director of the Rapid Capabilities & Critical Technologies Office (RCCTO), US Army

Vice Adm. Johnny Wolfe, director of Strategic Systems Programs (SSP), US Navy

Lt. Gen. Duke Richardson, military deputy to the assistant Air Force secretary for acquisition, technology, and logistics

Vice Adm. Jon Hill, director of the Missile Defense Agency (MDA)

Mike White, Assistant Director for Hypersonics for the Undersecretary of Defense, Research & Engineering

Kevin Fahey, Assistant Secretary of Defense for Acquisition

For more from our interview with Lt. Gen. Thurgood, read the edited transcript below:

Q: How does the division of labor among the services work?

Army Lt. Gen. Neil Thurgood

A: It's a really great relationship we have with Admiral Wolfe in the partnership we have with the Navy. We have a Memorandum Of Agreement: the Navy owns the design responsibilities for all the services, the Army owns the production responsibilities for the glide bodies for all the services.

The Air Force has always been an important partner in this program, but they were mostly a receiver of the technologies. Now the Air Force has terminated their HCSW [Hypersonic Conventional Strike Weapon] program, which shared the same common hypersonic glide body.

Some of the investments they had in their program, we've agreed as a glide body board of directors to redistribute some of that into the Army and Navy, because they had resources that we can now leverage, like software integration labs and hardware integration labs.

They're still members of the board. They still come to our meetings as a partner. We're still happy to have them, and there still may be an opportunity in the future for that piece of the Air Force technology to be regenerated. We're keeping them in the loop as we go forward.

Q: How are you working with industry?

A: We don't have a big single prime just doing everything for us. There's about six companies that are the key players in this, with a large number of subs. We've formed a partnership called the Industrial Board of Directors in order to be transparent and engage with our industry partners.

We have a quarterly meeting. We share our literature. We share our cost data. We share schedule data across all these companies totally transparently.

We have signed a contract with a company called Dynetics to become the commercial producer of the glide bodies, but it's one thing to have the technical data package on how to build a thing: It's another thing actually to build it. if you're anything like me, the first time you built a baby crib, you had a couple of bolts left over. There's a learning curve that's associated with that and we want them to learn that from experts, which is Sandia.

Dynetics and their subcontractors, including Lockheed, Raytheon, and General Atomics, they're all out at Sandia in teams. We just finished our second class, actually. They have been helping build the glide bodies that we're using.

They'll actually build their first glide body out at Sandia. Then they'll transition to Huntsville.

Q: How are both the government and industry sides coping with COVID-19?

A: As tragic as it is, we've been able to keep ourselves on track and minimize the impact.

We're maximizing our telework in the government and with our industry partners as much as we can. We haven't changed any of our battle rhythm meetings, our review processes. We don't do it in person anymore. We do it on VTC and our online tools.

If you're a software engineer, you can actually do that work in an alternate work location. You don't actually have to be at your office. Same with some engineering work. They're really being quite creative and innovative in how they're keeping themselves on track.

Our industry partners, some of this is touch labor, meaning they've got to bend metal and they got to put bolts in things. They've been able to make smaller groups and different shifts. You can have smaller groups come in at variable times throughout the day rather than a single shift when everybody's there at one time in the day.

Q: How has the program progressed through flight tests, and what's the plan going forward?

A: 2011 was really the first hypersonic flight test; that was done by the great S&T community in conjunction with Sandia, who owns the design. It was really to see if the materials, the technology we had would survive the environment we needed to survive.

That was followed by another successful test in 2017 with some refinements to the glide body. And then this test we just had last week had some additional refinements. Now we're really making tweaks to the insides of the glide body and how we execute the missions.

I won't give any specific numbers, but the original glide body was a little bit bigger when we were testing in 2011. Now the glide body is the size that we're going to build. There are nuances of the changes in the material technologies, certainly the technologies that are on the inside, that you're not going to be able to tell by looking at it

If you look at the 2011 test, it was really to see if the materials, the technology we had would survive the environment we needed to. Once you proved that in 2011, then in 2014 you would start envelope expansion, you start accuracy expansion, lethality expansion.

Now unfortunately, as you mentioned, the 2014 test, the booster was fouled on takeoff and the glide body never actually separated from the booster. In the 2017 test, we had to replan some of the things in '14 that didn't work out.

Our next flight test will be in third quarter '21. Then we have additional flight tests in first quarter '22. OSD [the Office of the Secretary of Defense] has the lead to make sure that our test infrastructure can support what we need. There's a lot of work going on what the range complexes need to adjust to.

As we accelerate our tests, we'll actually be able to train the future workforce at a faster pace than we have. The young engineers are in ops all the time.

https://breakingdefense.com/2020/04/hypersonics-5-more-army-navy-flight-tests-by-2023/

Return to top

# US ARMS CONTROL

Pew Research (Washington, D.C.)

**Americans See Spread of Disease as Top International Threat, Along With Terrorism, Nuclear Weapons, Cyberattacks**

By Jacob Poushter and Moira Fagan

April 13, 2020

Americans continue to see many international issues – including terrorism, the spread of nuclear weapons and cyberattacks – as major threats to the well-being of the nation. But as the COVID-19 pandemic sweeps the globe, the greatest threat named by Americans in a March 3-29 Pew Research Center survey is the spread of infectious diseases.

Nearly all U.S. adults (98%) say this is at least a minor threat, with roughly eight-in-ten (79%) naming outbreaks of disease as a major threat to the country. This is 27 percentage points higher than the level of concern about infectious disease in the midst of West Africa's Ebola outbreak in 2014.

But infectious disease is not the only issue where Americans see a growing threat. Concerns about China and the condition of the global economy have also been on the rise. The survey, conducted at a time of surging COVID-19 cases in the United States, found that worries about both the threat of infectious diseases and the condition of the global economy rose after President Donald Trump declared a national emergency on March 13.

Overwhelming majorities of Americans say cooperation with other countries is important when dealing with each of the international issues tested, and this is especially true of the spread of infectious diseases. On this issue, 86% say it is very important to cooperate with other countries, and 97% say it is at least somewhat important to cooperate.

The new strain of coronavirus is thought to have originated in Wuhan, China. The past year has seen tensions between Beijing and Washington on a number of topics, including the current pandemic,

trade and economic issues. Roughly six-in-ten Americans (62%) name China's power and influence as a major threat, a figure that has increased sharply in recent years. By comparison, in 2017, 41% said China was a major threat to the U.S.

And as the economic fallout from the COVID-19 crisis becomes clearer, Americans increasingly see the condition of the global economy as a threat. Since 2017, concerns about the state of the world economy have risen 18 percentage points, from 37% saying it was a major threat in 2017 to 55% who say so today.

A majority of Americans also see global climate change and Russia's power and influence as major threats, although stark partisan divides characterize each of these issues.

In general, Democrats and Democratic-leaning independents tend to be more concerned than Republicans and Republican-leaning independents about each threat tested on the survey. But this is especially true on the threat of climate change, where there is a 57 percentage point difference between the shares of Democrats (88%) and Republicans (31%) calling climate change a major threat. Partisan differences of this nature are seen on other issues tested, including Russia's power and influence (Democrats are 22 points more likely to say this is a major threat), global poverty (19 points) and the condition of the global economy (17 points).

Republicans, however, are more concerned about the large numbers of people moving or migrating from one country to another and terrorism than are Democrats.

Democrats and Republicans are equally concerned about the threat of disease, and this was largely true in 2014 and 2016 as well.

Roughly half of Americans or fewer are very concerned about global poverty, migration and longstanding conflicts between countries or ethnic groups. Still, majorities name these as at least minor threats.

These are among the major findings of a Pew Research Center survey of 1,000 U.S. adults conducted by telephone from March 3-29, 2020. The survey took place as COVID-19 spread across Asian and European countries, and then across the U.S. During the fieldwork period, President Trump declared a major national emergency and the economy endured major shocks, including plummeting stock prices; the closure of many retail, travel and food sectors; and a major drop in the price of oil.

Concern about disease threat high among all Americans, but especially those with less education and lower incomes

With most Americans worried about the spread of infectious disease, differences among demographic groups are relatively narrow. Still, some groups register particularly high levels of concern.

For example, Americans with less than a college degree are 9 percentage points more likely to be concerned about the threat of infectious disease than those who have a college degree or more education. Similarly, those who have incomes of less than $50,000 per year are 10 points more concerned about the threat posed by infectious diseases than those with higher incomes.

Worries about the spread of disease intensified through March

As the COVID-19 outbreak developed across the country, concerns about the threat posed by the spread of infectious diseases grew rapidly as well.

Among respondents who took the survey from March 3-12, before the declaration of a national emergency and the suspension of most professional and collegiate sports seasons, 73% said the

spread of infectious diseases was a major threat. But once the declaration was made on March 13, as cases of the novel coronavirus increased across the U.S., more became concerned about the issue. Among those surveyed between March 13-29, 84% named spreading disease as a major threat.

Concerns about the condition of the global economy and global poverty also saw increases during the field period. About halfway through the dramatic slide in stock market prices from March 3-12, 48% of Americans saw the condition of the global economy as a major threat. But between March 13-29, as businesses began to close due to the crisis and Italy went into lockdown, major concern about the global economy rose to 60%.

Infectious disease, terrorism, nuclear weapons and cyberattacks are top concerns

Americans are most likely to consider the spread of infectious diseases as a major threat to the nation. However, majorities rate eight out of the 11 threats tested on the survey as major threats.

At least seven-in-ten Americans also name terrorism, the spread of nuclear weapons and cyberattacks from other countries as major threats to the U.S.

Only about four-in-ten Americans say that large numbers of people moving from one county to another or long-standing conflicts between countries or ethnic groups pose major threats to the country.

Nearly one-in-five (19%) say the movement of people is not a threat, the largest share across all threats included in the survey.

Older Americans more likely to see major threats, except in case of climate change

Across most of the international issues tested in the survey, older Americans express greater concern than those in younger age groups.

The difference is largest on the issue of migration: Half of those ages 50 and older say the large numbers of people moving from one country to another is a major threat, compared with 22% of those ages 18 to 29. Large gaps are also seen between older and younger Americans on the threats posed by cyberattacks, Russia, terrorism, nuclear proliferation, China and long-standing international and ethnic conflicts.

The reverse is true on the issue of global climate change: Younger Americans are more likely to say this is a major threat compared with their older counterparts. About seven-in-ten (71%) 18- to 29year-olds say climate change is a major threat, compared with 54% of Americans 50 and older.

More now say climate change is a major threat

The belief that climate change is a major threat has increased steadily in the United States over the past seven years. Six-in-ten Americans see climate change as a major threat to the country today, up from a low of 40% who said the same in 2013.

Views of climate change have been consistently partisan over the past decade. Now, Democrats and Democratic-leaning independents are more than twice as likely to say climate change is a major threat than Republicans and Republican-leaning independents (88% vs. 31%). The share of Democrats who believe climate change is a threat has risen from 61% in 2009, while Republican views on this issue have remained relatively steady.

Democrats are also more likely than Republicans to say Russia's power and influence poses a major threat. Nearly seven-in-ten Democrats and Democratic-leaning independents (68%) said this of Russia, compared with 46% of their Republican counterparts, a difference of 22 percentage points.

This partisan difference has been consistently wide since Trump's election; before that, partisan views of Russia were less pronounced and mostly moved in tandem.

Americans generally favor international cooperation to counter threats, but partisan divides persist

Americans overwhelmingly say that cooperation with other countries is important when dealing with major international threats. This is especially true on the preeminent international issue of early 2020, the spread of infectious diseases. Here, 86% say it is very important to cooperate with other countries when dealing with disease outbreaks, and fully 97% say it is at least somewhat important to cooperate.

Indeed, an overwhelming majority of Americans think cooperation with other countries is important for dealing with all the major international issues polled. But there is variation on whether people say cooperation is very important. For example, eight-in-ten Americans say cooperation on terrorism and the spread of nuclear weapons is very important, compared with only 55% and 52%, respectively, who do so on the issues of migration and long-standing conflicts between countries.

However, Americans are more likely to say these major issues require cooperation than they are to say they see them as threats. When comparing whether these issues are seen as major threats and whether cooperation to deal with them is very important, Americans tend to be more likely to say they require cooperation. For example, 55% of Americans see cooperation with other countries as very important for dealing with migration, but only 42% of Americans see migration as a major threat.

There are also partisan differences on whether cooperation is important in dealing with international threats. On each issue, Democrats are more likely than Republicans to say that cooperation with other countries is very important. The differences are especially large (over 20 percentage points) on global climate change, global poverty, the condition of the global economy and conflicts between other nations.

On the spread of infectious diseases, Democrats are also more likely than Republicans to say cooperation is very important, although partisan differences are not as stark as on climate change. Roughly nine-in-ten Democrats (92%) say cooperation with other countries is very important for dealing with the spread of disease, compared with 79% of Republicans.

https://www.pewresearch.org/global/2020/04/13/americans-see-spread-of-disease-as-topinternational-threat-along-with-terrorism-nuclear-weapons-cyberattacks/ Return to top

Pacific Northwest National Laboratory (Richland, Wash.)

**How Lasers Can Help with Nuclear Nonproliferation Monitoring**

By Rebekah Orton

April 10, 2020

Mountains. Shipping containers. The surface of Mars.

There are times when it's complicated or impossible to bring a sample into a laboratory to test its composition.

This is especially true when it comes to detecting explosions containing nuclear material. Detection that can be done quickly or onsite minimizes human exposure during hazardous collections or laboratory analysis.

However, the nature of nuclear chemistry—particularly oxidation, the way uranium interacts with oxygen during a nuclear explosion—is largely unknown, leaving gaps in our ability to accurately identify nuclear activities. A team of researchers led by PNNL physicist Sivanandan S. Harilal is working to expand our uranium chemistry understanding using a surprising tool: lasers.

The method, detailed in a recent paper in the Journal of Analytical Atomic Spectrometry, shows how measuring the light produced in plasmas made from a laser can be used to understand uranium oxidation in nuclear fireballs. This capability gives never-before-seen insight into uranium gasphase oxidation during nuclear explosions. These insights further progress toward a reliable, noncontact method for remote detection of uranium elements and isotopes, with implications for nonproliferation safeguards, explosion monitoring and treaty verification.

Nonproliferation plasmas

A pulsing, fast-as lightening laser blasts into a solid material and excites the atoms so they vaporize into a tiny, brightly colored plume of plasma. The reaction when the atoms jump into this superhot plasma plume emits light which researchers can capture and study using optical spectroscopy.

Plasmas made from different elements at different temperatures emit different wavelengths of light, each of which produce a distinct color. Thus, the color of plasma in a candle's flame is different than the plasma made in a neon sign, or the microscopic plasma plume Harilal and his team generate to study uranium.

The distinct colors of light emitted by a plasma are the same no matter how much of a material is turned into a plasma. Harilal's uranium laser produced plasma (LPP) is made from such a small amount of nuclear material that the method can be considered non-destructive. Even so, the light measurements researchers get from LPP is similar to the reactions in the fireball produced during a nuclear explosion.

"It's a question of scale," says Harilal. "The lasers create the same fireball chemistry that happens in a nuclear explosion, so we can study the chemistry and how it reacts to different environmental conditions. It's small, but the light is good. We can collect it with no problem."

Seeing the light in LPP

Although light from plasmas is easy to collect, the difference in the wavelengths of light that specific molecules emit is more difficult to decipher. And uranium is so reactive with oxygen in the explosion fireball that it creates many different uranium oxide combinations. These molecular combinations can be anywhere from one uranium atom paired with a single oxygen atom, to multiple uranium atoms bonded to as many as eight oxygen atoms.

Multiple uranium species immediately complicate how spectroscopy deciphers simple light collection. These uranium species emit light in a such a tight color spectrum with such small differences in wavelengths that each wavelength is only beginning to be matched with its respective uranium oxide transition.

The researchers zoomed in on the tight spectrum of wavelengths using narrow-band filters the team had previously developed. These narrow-band filters work by isolating the light emitted at specific wavelengths so that only the wavelengths associated specific species are collected and analyzed.

One filter measured only atomic uranium, and another measured uranium oxide in the plasma during the laser pulses. The team then measured the light emitted from the plasma as they increased oxygen in the environment, watching to see how the chemistry changed in the presence of more oxygen.

Using precisely timed snapshots of the plasma (called fast-gated imaging), Harilal and his team directly observed how uranium monoxide and uranium atoms moved through the LPP over time and by location. This let them see how and where the species were formed and how they persisted as the plasma plume expanded and dissipated.

The location of uranium and uranium oxide during the first 5 to 50 millionths of a second of a laser produced plasma's life cycle. The gray rectangular boxes represent the target position.

The team found that uranium oxides are formed further from the target, where lower temperatures favor molecular recombination. Uranium oxides also form at later times in the lifetime of the plasma. When more oxygen is present, the plasmas don't last as long.

Understanding the evolution of uranium atoms to uranium monoxide to higher oxides is critical for predictive modeling of explosion events. Precise, experimentally validated models mean more effective nuclear nonproliferation monitoring and better overall understanding of uranium chemistry.

In addition to helping researchers better understand uranium plasma chemistry, the laser-based techniques used in this work are also under development for in-field, remote nonproliferation monitoring as well. Since laser ablation coupled with optical emission spectroscopy measures light emitted from a plasma, data collection can be done from a safe, standoff distance that requires no sample handling. This technique has implications for nuclear forensic and safeguards monitoring.

This research was performed as part of the Department of Energy's National Nuclear Security Administration. Team members included Elizabeth Kautz, Bruce Bernacki, and Sivanandan S. Harilal of Pacific Northwest National Laboratory and Patrick Skrodzki, Milos Burger, and Igor Jovanovic of the University of Michigan, with Mark Phillips from the James C. Wyant College of Optical Sciences at the University of Arizona Tucson, and support from Opticslah in Albuquerque, New Mexico. https://www.pnnl.gov/news-media/how-lasers-can-help-nuclear-nonproliferation-monitoring

Return to top

The Hill (Washington, D.C.)

**Trump Names Arms Control Envoy as Treaty's Expiration Looms**

By Rebecca Kheel

April 10, 2020

President Trump has officially named Marshall Billingslea as his special envoy for arms control, a role expected to spearhead efforts to reach a nuclear agreement with Russia and China.

The White House announced Billingslea's appointment in a news release Friday, roughly a month after reports surfaced that Billingslea was chosen.

The appointment comes as the United States's agreement with Russia, known as the New START Treaty, expires in less than a year.

The agreement, which was negotiated by the Obama administration, caps the number of deployed nuclear warheads the United States and Russia can have at 1,550 a piece. There are also limits on deploying weapons, such as intercontinental ballistic missiles, that could deliver the warheads. And the treaty lays out a verification regime that includes 18 on-site inspections per year.

The agreement expires Feb. 5, 2021, but there is an option to extend it another five years after that.

Arms control advocates have urged Trump to immediately extend the agreement, arguing that letting it lapse would mean no legal constraint on the world's two largest nuclear arsenals for the first time in five decades.

But the Trump administration has said it wants to expand the scope of the agreement, including adding China and new Russian weapons systems. Russia has offered to extend the treaty immediately with no pre-conditions, while China has repeatedly rejected joining talks.

Billingslea is currently the assistant Treasury secretary for terrorist financing.

A State Department statement on the appointment described Billingslea as having "deep expertise in arms control and broad experience in foreign policy and national security, having held senior positions in the private sector, NATO, the Department of Defense and on the staff of the United States Senate Committee on Foreign Relations."

"President Trump has charged this administration with beginning a new chapter by seeking a new era of arms control that moves beyond the bilateral treaties of the past," the statement said. "The appointment of Marshall Billingslea reaffirms the commitment to that mission."

He was previously nominated to be undersecretary of State for civilian security, democracy and human rights in 2018, but his confirmation stalled as Democrats and advocates raised questions about his role in the George W. Bush administration interrogation program now widely viewed as torture.

Billingslea oversaw conditions of detainees at Guantanamo Bay in 2002 and 2003. A 2008 Senate report said he advocated interrogation techniques Congress later outlawed as torture.

In his confirmation hearing for the human rights role, Billingslea said he would "advocate for and respect" Congress's 2015 decision to ban torture.

Senate Foreign Relations Committee ranking member Sen. Bob Menendez (D-N.J.) blasted Billingslea's appointment as arms control envoy.

"Mr. Billinsglea has a troubled history with the Senate Foreign Relations Committee," Menendez said in a statement Friday. "Following his unsuccessful nomination for the State Department's top human rights post, serious questions remain concerning whether he was forthright and truthful when testifying before the committee about his role in the detainee torture scandal during the Bush administration."

Menendez also highlighted that jobs traditionally tasked with leading arms control negotiations that require Senate confirmation — including under secretary of State for arms control and international security and assistant secretary of State for arms Control, verification and compliance — have been vacant for months.

"This terrible decision is emblematic both of this administration's willingness to sidestep the Senate's constitutionally-mandated role of nominee advice and consent, and the haphazard, careless way the administration treats nuclear diplomacy," Menendez said.

"This is not who should be put in charge of our nuclear diplomacy," he added. "If the administration is truly serious about pursuing an effective arms control agenda, it should reverse course and nominate qualified individuals for the critical unfilled senior arms control positions at the State Department as soon as possible."

https://thehill.com/policy/defense/492295-trump-names-arms-control-envoy-as-treatysexpiration-looms

Return to top

# COMMENTARY

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

**Toward a New Theory of Power Projection**

By Michael J. Mazarr

April 15, 2020

Now that the pandemic crisis is hammering America's finances, U.S. strategy risks veering even further into permanent insolvency. Even before the crisis, the military demands of an intense global competition with China, Russia, and secondary competitors like Iran and North Korea were becoming financially untenable. Now, the costs of the current crisis — in both the short and long term — are likely to lead to further cuts from the defense budget and may call into question the sustainability of major U.S. commitments. The United States is likely to soon be engaged in a painful exercise: undertaking a truly fundamental prioritization, identifying defense capabilities and commitments that can be abandoned, or pursued in more efficient ways, without undue risk. One item that needs to be on that list of priorities is expeditionary power projection.

Long-distance power projection — the ability to transport overwhelming air, sea, and land power to far-off places like Taiwan, Korea, or the Baltics and win decisively in major combat — exercises a predominant influence on U.S. defense policy. It generates the most demanding requirements for military capacity and capabilities, determines many systems the services buy, and shapes the concepts the services develop. It is no exaggeration to say that the U.S. military of today is largely built to project power in this way.

Yet, even before the current crisis, several powerful trends called for a fundamental reassessment of the way in which the United States projects power. The conventional method could be termed "expeditionary power projection" — the strategy of stationing the bulk of the joint force in the United States and deploying them to distant locales to decisively defeat aggression. This approach is rapidly becoming obsolete. Picking up thousands of tons of mass and carrying it to a location on the other side of the world where an opponent has decisive operational advantages proved successful against second-tier powers like Iraq; it will not be effective against either near-peer militaries like Russia and China or even a nuclear-armed North Korea. But that approach is only one way of solving the problem of long-distance deterrence and defense, and it is time for the United States to seek other ways of doing so. This essay briefly outlines several powerful and interconnected flaws in expeditionary power projectionand then articulates principles of a possible alternative concept.

We'll Lose When We Get There

The most well-known and widely discussed operational flaw in expeditionary power projection is the so-called "anti-access/area denial problem" — the idea that Russian and Chinese anti-access and area denial capabilities can blunt the effects of U.S. military operations. Dozens of studies have argued that U.S. forces will be hard-pressed to operate effectively anywhere near the forward edge of the battle and will sustain significant losses in the attempt to get there. Meanwhile, North Korea has its own version of anti-access and area denial capabilities — an increasingly sophisticated

missile force and nuclear deterrent. This situation is partly a function of new precision strike and sensing technologies being deployed by U.S. competitors but also of basic physics: Potential adversaries will be fighting very close to home and have decisive geographic advantages in any of these contingencies.

To be sure, America's view of the anti-access/area denial problem may be disconnected from the actual strategy of U.S. rivals. Some analyses have questioned how effective some of these denial capabilities would be in practice. There are at least partial remedies to the anti-access/area denial challenge in terms of posture, concepts, and capabilities. If the anti-access/area denial problem poses the sole barrier to U.S. expeditionary power projection ambitions, the United States just might be able to surmount it. But it does not.

We Don't Have the Lift to Get There

A second challenge is that the United States does not have nearly enough strategic lift to transport land forces — and the sustainment foundation for air units — to far-off fights in a timely manner. Airlift cannot haul enough weight while and most major sealift ships are in a reserve status and generally old, short of spare parts, and potentially unreliable. Without major recapitalization investments, sealift capacity will sharply decline after 2020. A devastating analysis contended that the U.S. sealift fleet could be a "single point of failure" for power projection missions.

In theory, the United States could buy itself out of this shortcoming. But, given increasing fiscal constraints, massive new investments in strategic lift seem unlikely. The United States will need months, therefore, to build up necessary forces in any threatened theater — and potential adversaries, who have closely studied U.S. operations in the Gulf and Iraq Wars, now aim to achieve their local objectives as quickly as possible. Lift shortfalls alone mean that an expeditionary approach to power projection, which assumes a long period of amassing forces in the region, is no longer a credible way of threatening responses to many cases of major aggression.

Forces in Transit Will Be Stymied or Wrecked

Units in transit to a distant war will also face an increasingly devastating gauntlet of attacks, fueled in part by the emerging revolution in unmanned and swarming systems, pervasive sensing, and artificial intelligence. The full maturation of the precision-weapons revolution — alongside the emergence of related technologies such as autonomy and artificial intelligence — is creating an unprecedentedly lethal battlefield environment. These trends apply to movement across oceans and even airways: As James Lacey recently argued in War on the Rocks, "The oceans, never a hospitable environment, are increasingly deadly, to the point where the survivability of independently operating naval task forces are in question."

In a future regional conflict as U.S. forces steam or fly toward a battle, an adversary could employ semi-autonomous unmanned aircraft, drone submersibles, small vessels, and smart mines to hammer the air and sea convoys. Attack submarines could decimate them with torpedoes and cruise missiles while bombers shoot long-range fire-and-forget weapons from hundreds of miles away. Clouds of swarming, tiny unmanned aerial systems could emerge from surfaced submarines or passing aircraft and descend on transport ships and their escorts — or even intercept slowmoving transport aircraft. Cyber operations will scramble the information systems and controls of U.S. vessels and create logistical chaos in ports. An aggressor could use direct attacks on space assets and cyber operations to disrupt communications and navigation, including GPS guidance. Forces that make it to their destination will then face crippling logistics shortfalls and disruptive attacks within theaters. Meanwhile, aggressors will surely threaten allies and partners

with economic, cyber, or military attacks to ensure that they deny U.S. forces access to critical bases, staging facilities, and even airspace.

In the perpetual contest between offense and defense, the United States will develop answers to some of these risks. Directed energy weapons, for example, are being investigated as a possible answer to drone swarms. But, the emerging era of massed strikes will inescapably boost an aggressor's ability to degrade U.S. forces in transit.

Meddling in the U.S. Homeland Will Disrupt Mobilization

Those flaws in power projection are joined by a newer challenge associated with emerging information tools and technologies that have the potential to stymie the domestic foundation for projecting power — a danger partly embodied by what a new RAND report calls "virtual societal warfare." As advanced societies become increasingly dependent on information networks, algorithmic decision-making and a super-integrated "Internet of Things," and as the ability to manipulate truth becomes more prevalent and powerful, the potential for an outside actor to create mischief will be very great. An aggressor could generate widespread confusion and chaos in ways that would be especially problematic for strategies of expeditionary power projection, including targeting mobilization and logistics systems in the United States.

Such a campaign might begin with an effort to prevent power projection from happening in the first place. Over social media and via "deep fake" video and audio, aggressors will seek to muddy the facts at issue and weaken the basis for a response. The resulting ambiguity could create a window of uncertainty — from a few days to a week or more — in which the United States and others might hesitate to respond. Such hesitation is especially problematic regarding expeditionary forms of power projection that demand that the United States start and sustain force flow in a timely manner.

If the United States goes ahead with plans to deploy forces, the aggressor could then undertake more hostile forms of disruption. The aggressor could launch ransomware attacks on U.S. municipalities like the attack that recently caused New Orleans to declare a state of emergency, dislocating the delivery of public services. It could use social media tools to foment protests and opposition to the war.

If those efforts failed to deter a U.S. president from beginning force flow, escalating attacks could focus more precisely on U.S. mobilization and logistics capabilities, including the disruption of military units as they leave a garrison or base. Some of these attacks would focus on traditional critical infrastructure targets such as energy and telecommunications networks. However, in a new era of more personalized and generalized virtual societal warfare, an aggressor could become more precise, emptying the bank accounts of service members and their families, issuing fake warrants for the arrest of their children, bringing havoc to the "Internet of Things" in their homes, and broadcasting verbal warnings from their Alexa or Siri speakers.

We cannot know in advance just how crippling these virtual attacks would be. Societies and militaries are resilient. Even today, in the midst of the pandemic, the United States military could — with significant risk — undertake large-scale power projection missions. But, even partly effective homeland-disrupting campaigns pose challenges for expeditionary models of power projection: The time, domestic logistical effort, and political will needed to gather forces and deploy them thousands of miles all provide time for an aggressor to weaken the national consensus behind such a response as well as the physical processes needed to accomplish it.

In fact, the risk of such attacks extends beyond the direct adversary in any future conflict. Multiple

U.S. rivals could gang up in a crisis or war to impose even greater levels of disruption. In a war with China, for example, Russia, Iran, North Korea, and others — even individuals or non-governmental networks — might see a golden opportunity to unleash cyber and information warriors to impede the U.S. response and deal a decisive blow to the U.S. reputation for military primacy. The primary aggressor could also employ such actors as surrogates. A future U.S. effort to dispatch a classic expeditionary power projection effort could trigger a whole range of disruptive attacks.

Toward a New Approach

These threats to expeditionary power projection are not new. In fact, U.S. military services and other parts of the U.S. government are working on ways to mitigate them. Yet, given the unavoidable geographic asymmetry and current trends in precision weaponry, unmanned systems, and information networks, it seems increasingly dangerous to assume that the United States can credibly threaten to project expeditionary power over trans-oceanic distances to the doorstep of other major powers and "win" extended, large-scale conflicts at an acceptable cost. The question of what promises the United States continues to make in the most demanding power projection cases is beyond the scope of this essay. But, if it does intend to continue serving as a backstop deterrent to major aggression in far-off contingencies, it will need a new approach. Such an alternative could have three primary elements: forward-deployed or long-distance strike capabilities to degrade invading forces; concepts for creating the prospect of a prolonged resistance even if the aggression achieves some goals; and ways of imposing costs on an aggressor across multiple domains beyond military operations.

An initial step would be to threaten credible local military effects without transporting large U.S. forces to the battle area. This step could include helping potential targets of aggression make themselves less vulnerable in part by taking advantage of the same sorts of emerging technologies that threaten expeditionary models of power projection. The United States could help partners and allies develop autonomous swarming systems, smart mines, and cheap, anti-armor and anti-ship missiles to disrupt and wear down an invasion force. T.X. Hammes has made a compelling argument for the value of such technologies in the hands of U.S. allies and partners. The United States could also conduct train-and-advise missions to help build effective reserve forces capable of operating these systems. Additionally, it could aid allies and partners in developing powerful cyber capabilities to disrupt the homeland of an aggressor and its own power projection activities — including the sort of comprehensive virtual societal warfare attacks discussed above.

In terms of its own military role in the initial fight, the United States could focus on ways to impose costs on an initial attack without relying on the long-distance deployment of major combat elements. This path would not presume an ability to forward-deploy a significant number of additional heavy combat units — which is both politically infeasible and strategically provocative in most cases— but would, instead, mark an effort to use innovative approaches to dispersed firepower to achieve deterrent effects. The sinews of such a revised approach are emerging in embryonic form in a range of widely-discussed concepts that envision resilient networks of somewhat self-organizing nodes of mostly forward-deployed fighting power to bring firepower to bear on aggressive forces. Such a network could be supported by select types of long-range strike systems, including cyber, space, long-range bombers and missiles, and limited, stealthy maritime and air assets.

In support of this emerging vision of distributed firepower, a modified U.S. approach to power projection would invest in larger numbers of various precision weapons capable of penetrating contested airspace. It would accelerate the research and deployment of swarming and unmanned systems that do not rely on airfields for operation. In a maritime theater like the Pacific, it would

focus in part on stealthy and submersible platforms on regular local patrol. It would experiment with multiple new force designs similar to but well beyond what the Army is beginning to do with its Multi-Domain Task Forces.

Having laid the groundwork to be able to impose costs on aggression without large-scale force movement, the United States would then work with allies and partners on the second element of a revised approach: ensuring that any resistance would be prolonged, confronting an aggressor with the potential of an extended fight. The United States could help partner nations build the capabilities for long-term resistance, including well-equipped reserves trained for insurgency; large magazines of cheap, simple rockets and missiles as well as hidden 3D printing facilities to churn more out; stealthy underground reservoirs capable of releasing swarms of attacking drones on time-delayed schedules; and cyber units based around the world that are capable of launching crippling attacks even if their homeland was overrun. The United States could also pre-set, and then directly support, a potent civil resistance to complement a military insurgency.

When the Soviet Union invaded Afghanistan in 1979, the United States declared the attack illegitimate and sought to reverse it — in part with economic and political penalties but without any military "power projection" beyond aid to the Afghan resistance. The analogy is not exact, but a new approach could search for supercharged versions of a very similar strategy — one that threatens an aggressor with a long and debilitating campaign rather than a quick and painless fait accompli.

Finally, the third component of a revised strategy for power projection would involve a comprehensive global campaign to harass an aggressor's world-wide interests. This third component — a cross-domain, holistic, non-kinetic, or "unrestricted" approach to power projection — would not involve U.S. attacks on aggressor military forces far from the area of aggression, but would employ non-military, often non-kinetic means to impose economic, political, and social costs. The aggressor state's companies would see their activities embargoed or disrupted with electronic or regulatory means; movements protesting or launching political harassment of the aggressor's local activities could be funded and empowered. More ambitiously, the United States could threaten forms of economic strangulation, employing elements of what T.X. Hammes has called "offshore control" and Mike Pietrucha has termed a "strategic interdiction strategy" — taking advantage of an aggressor's dependence on important exports of materials, energy, and supply chains to interdict its maritime shipping and potentially other sources of trade. Such large-scale interdiction efforts would have to be planned in advance, including agreements from other nations to play roles in the effort, but neither the threats nor the agreements would need to be made public.

Such a campaign would also incorporate a multilateral effort to wreck the aggressor's geopolitical legitimacy and influence. This effort could comprise everything from U.N. resolutions to expelling ambassadors to a coordinated multilateral campaign to encourage nations to clamp down on its political and cultural influence tools to global bans on broadcasting by the attacker's state media. On its own, such reputational punishment cannot be expected to deter military action. Yet, Russia and especially China care deeply about being accepted as legitimate great powers, and the prospect of a far more fundamental expulsion from the world community would not be treated lightly.

Taken together, these three components would add up to a new concept of projecting power and, by extension, achieving deterrence in distant locations. Its objective would be to demonstrate to a potential attacker that large-scale aggression would be ruinously costly to their society as well as indirectly threatening to the stability of their regime. This perspective would have clear implications for defense policy and investment — for example, encouraging a partial shift in the balance between emphasis on heavy, contiguous U.S.-based joint forces and more dispersed, forward-based, cutting-edge technologies and unit types as well as funds to support allied and

partner acquisition of capabilities central to this approach. The U.S. Marine Corps' new force design guidance provides a good example of the scale of rethinking that will be required.

The era of expeditionary power projection dominance is gone, at least as assumed by the traditional model. Pretending otherwise will continue to waste resources, skew the investments and concepts of the services, and, if war does occur, risk early defeat and/or catastrophic escalation. The U.S. effort to support the deterrence of a major war has played an important role in sustaining peace since 1945 and can continue to do so — but it is time for a major shift in how the United States plans to fulfill this critical military mission.

Michael J. Mazarr is a senior political scientist at the nonprofit, nonpartisan RAND Corporation. The views expressed here are his own.

https://warontherocks.com/2020/04/toward-a-new-theory-of-power-projection/ Return to top

Defense News (Washington, D.C.)

**Norway's Allies Share Their Views on the Country's New Defense Plan**

By Stephen J. Flanagan and James Black

April 16, 2020

As countries around the world grapple with the unfolding coronavirus pandemic, the wider business of government continues. Norway's Ministry of Defence will shortly publish its next Long Term Plan, which will then be debated by parliament.

The plan outlines how the Armed Forces, in tandem with other elements of government and society, can best address the threats to Norway from hostile states, terrorists, and fragile and failing states. The plan also examines how to bolster national resilience to deal with other risks including hybrid warfare, climate change and pandemics.

A new Rand report, commissioned by the MoD to inform its strategy and policy development, offers perspectives from its closest allies on the emerging security challenges and strategic options facing Norway. We found broad alignment of Norwegian and allied assessments across Denmark, France, Germany, the U.K., the U.S. and NATO institutions, but some enduring differences in emphasis and priorities.

Other allies recognize Norway as punching above its weight and playing a critical role in the defense of the North Atlantic and High North. At the same time, our research concludes there is no time for complacency.

Norway's key allies agree that the most significant threat in the High North is not a crisis directed against Norway itself. The more plausible danger is "horizontal escalation" — a crisis elsewhere in Europe rapidly growing into a wider conflict that threatens Norwegian waters, airspace and territory.

Russia continues to demonstrate hostile intent, and its military capabilities threaten the ability of Norway and its allies to operate military forces, secure critical infrastructure and protect civilian populations. The collapse of the Intermediate-Range Nuclear Forces Treaty in 2019 brings an increased threat from medium-range ballistic missiles, requiring Norwegian and allied defense planners to adjust to new threats to the homeland and region. Improvements in the Russian Northern Fleet, including surface vessels and submarines armed with modern cruise missiles, also

pose an increased threat to NATO operations in the Norwegian Sea, to undersea internet cables and to sea lines of communication essential to reinforcing Norway from North America or Europe in the event of any conflict.

There is also strong consensus on the enduring threats posed by terrorism, nonstate actors and challenges such as climate change in the Arctic.

While all allies recognize the need to consider the strategic implications of a rising China, the United States sees China as a more direct and imminent security threat. Allies also welcome Norway's contributions to missions on NATO's eastern and southern flanks.

Allies perceive Norway as having an impressive mix of high-end capabilities for a country of its size and a mature total defense concept — its strategy for engaging all elements of society in national defense. These capabilities and commitments, coupled with a well-respected approach to strategy development, have allowed Norway to have significant influence on strategic thinking within NATO.

Strengthen deterrence in Norway: Expand surveillance and reconnaissance capabilities; increase the military posture in northern Norway; enhance the protection of bases and forces against air and missile threats; maximize the F-35 fighter jet's potential to aid joint operations; and prepare for operations in contested cyber, space and electromagnetic environments.

Expand capacity to receive allied reinforcements: Build on lessons from the joint Trident Juncture 2018 exercise, which allies viewed as an important milestone but not a full stress test; pursue increasingly challenging training scenarios; ensure sufficient pre-positioned stocks of consumables and equipment; upgrade and expand infrastructure along with concepts for dispersing forces to prevent attack; and deepen cooperation to enhance military mobility and interoperability.

Explore concepts to hold potential adversaries at risk: Invite allies with more advanced reconnaissance and deep-attack systems to deploy them to Norway periodically; develop longerrange weapons for Norwegian forces; explore the utility of low-cost, unmanned assets; collaborate with key allies on concepts to deny adversaries access to the sea and to better project forces onto the littoral; and refine parallel strategic communications to control escalation.

Enhance national and societal resilience: Test and refine Norway's whole-of-government approach and the mechanisms for civil support to the military; contribute to NATO's strategy for addressing hybrid threats, such as disinformation, economic pressure and cyberattacks; and explore further measures to enhance collective preparedness and will to fight.

Solidify Norwegian contributions to NATO and partners: Continue contributions to NATO operations beyond the north; help to address variations in defense expenditure across all NATO nations and rebalance trans-Atlantic burden-sharing; promote deeper NATO cooperation with Sweden and Finland; and use innovation and industry to enable influence within NATO.

Other countries can learn from how Norway chooses to tackle these emerging challenges, and they can benefit from its lessons learned, particularly with respect to the total defense concept. Pursuit of some of these options, along with the Norwegian government's ongoing efforts to seek allied views, could help enhance deterrence in the north and overall NATO defense.

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https://www.defensenews.com/opinion/commentary/2020/04/16/allies-share-views-onenhancing-defense-of-norway-and-the-high-north/

Return to top

Defense News (Washington, D.C.)

**Expect a Surge in North Korean Missile Tests, and of Greater Range**

By Shea Cotton

April 10, 2020

North Korea is signaling this will be its busiest year of missile testing yet. In March, the regime conducted nine tests, the most in a single month recorded in our database.

Recall that on April 21, 2018, Kim Jong Un declared North Korea would cease intercontinental ballistic missile and nuclear tests in the lead-up to a summit with U.S. President Donald Trump. However, Kim's stated reason for the pause — more pragmatic than diplomatic — asserted it was because North Korea had "completed its mission" for its nuclear and missile program.

As diplomatic talks stalled, North Korea slowly began to unwind its pledge, and in May 2019, over a year after initially pledging to halt tests, it resumed launching missiles. Finally, on Jan. 1, 2020, Kim stated he no longer felt "unilaterally bound" by North Korea's moratorium on long-range missile and nuclear tests.

These renewed tests had a few different characteristics: They were smaller, of shorter range, solidfueled and new. Their novelty is especially important: Remember, Kim's stated reason for the testing freeze was because he felt confident enough in the systems he had already tested so as to make future tests of them superfluous.

That the missiles tested since May 2019 have been entirely new is not a coincidence and is perfectly in line with Kim's stated logic for the initial freeze. Several of North Korea's new missiles were so new, in fact, they had never been seen by analysts in the open-source sphere. The regime needed to test the newer systems to verify that they worked. Even more surprising, the tests appeared to have been largely successful.

As of writing, North Korea has conducted at least 35 missile tests, only one of which appears to have failed in flight, since resuming tests in May 2019. Even if there were a few more failed flight tests that North Korea had successfully covered up, this is a remarkable feat. It demonstrates that, while North Korea spent over a year not carrying out missile tests, it continued missile development.

There is zero reason we should assume North Korea has limited its research and development activities to its short-range systems. Given that these tests have all been of solid-fuel missiles, and that North Korea has already successfully tested and fielded longer-range, solid-fuel systems before its self-imposed testing freeze, the regime is likely working to expand its solid-fuel missile capabilities to achieve an intermediate-range capability, and potentially intercontinental range.

Currently, North Korea's intermediate-range ballistic missiles and ICBMs are all liquid-fueled systems, which are fragile and can only be fueled right before flight, costing precious time in a potential conflict. If North Korea is working to expand its solid-fuel capabilities into longer-range systems, it is likely the regime would want to test those weapons as well.

There are a few statements from the regime corroborating this. Most notably, following the March 21 test, North Korea explicitly stated that "the tactical and strategic weapons systems in the development stage will make decisive contributions" to North Korea's strategic plan and reworked defense strategy. These systems will need to be tested in order for North Korea to be confident in them.

The most interesting thing about North Korea's March 21 test of a short-range ballistic missile is that the statement teases further "tactical and strategic weapons systems in the development stages."

Finally, we are moving into what is historically the most active testing window for North Korea. Individual tests might not be possible to predict, but on the whole, North Korea's testing activities follow a somewhat regular pattern, with tests beginning in late February or early March and then proceeding through mid-September before dropping off for the year.

There's been speculation that North Korea's March 2020 tests were an attempt to demonstrate the regime is unaffected by the new coronavirus pandemic ravaging the rest of the world. While that could have played a part in it, and while we cannot know for sure, I believe we would have seen a similar number of missiles launched even without the pandemic.

This leaves U.S. policy and the chances for diplomacy with a dismal outlook. As with two years ago, when North Korea was preparing to meet the president for a summit, North Korea will not voluntarily give up its nuclear weapons or missile systems. The best that negotiations can probably hope to gain is to restart and lock in North Korea's missile and nuclear-testing moratorium in exchange for some sanctions relief.

My colleagues have written in depth about what the specifics of that might look like. While hardly the U.S.' most preferred outcome, it would at least ensure the regime would be limited in furthering its ability to strike the U.S. Potentially, in time, North Korea's current capability may even decay if it is unable to carry out tests verifying its systems function as expected. If not, then we may once again look back to now in a year's time as another missed chance to slow North Korea's missile development.

Shea Cotton is a research associate at the James Martin Center for Nonproliferation Studies at the Middlebury Institute of International Studies. He created and manages the North Korea Missile Test Database of the Nuclear Threat Initiative, as well as the Global Incidents and Trafficking Database.

https://www.defensenews.com/opinion/commentary/2020/04/10/expect-a-surge-in-northkorean-missile-tests-and-of-greater-range/

Return to top

# ABOUT THE USAF CSDS

The USAF Counterproliferation Center (CPC) was established in 1998 at the direction of the Chief of Staff of the Air Force. Located at Maxwell AFB, this Center capitalizes on the resident expertise of Air University — while extending its reach far beyond — and influences a wide audience of leaders and policy makers. A memorandum of agreement between the Air Staff's Director for Nuclear and

Counterproliferation (then AF/XON) and Air War College commandant established the initial personnel and responsibilities of the Center. This included integrating counterproliferation awareness into the curriculum and ongoing research at the Air University; establishing an information repository to promote research on counterproliferation and nonproliferation issues; and directing research on the various topics associated with counterproliferation and nonproliferation.

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

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

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