

Service Logisticians: Mini Nuclear Reactors Might be a Solution to Future Expeditionary Energy Needs



The Green Hornet flies over Naval Air Station Patuxent River April 22, 2010. On Earth Day 2010, the Super Hornet became the first Navy aircraft to demonstrate alternative fuel capability using a 50/50 blend of camelina biofuel and the Navy's primary jet fuel, jet propellant (JP)-5. U.S. NAVY

ARLINGTON, Va. – Top logisticians of the U.S. Navy, Marine Corps and the other armed services told a congressional panel Dec. 2 they are exploring the development of deployable, micro nuclear reactors as an energy source for warfighters in remote and austere environments.

"The Marine Corps clearly appreciates the value and potential future benefits of alternative energy sources," Lt. Gen.

Edward Banta, deputy commandant for Installations and Logistics, told a House Armed Services Committee hearing on operational energy and logistics challenges.

“Through our Marine Corps Warfighting Lab, we have been involved in looking at hydrogen fuel as a potential future source, and I would think that combining that with both micro grids as well as potential micro reactors would provide great benefits to us in the future, but particularly operating in an expeditionary area environment,” Banta added.

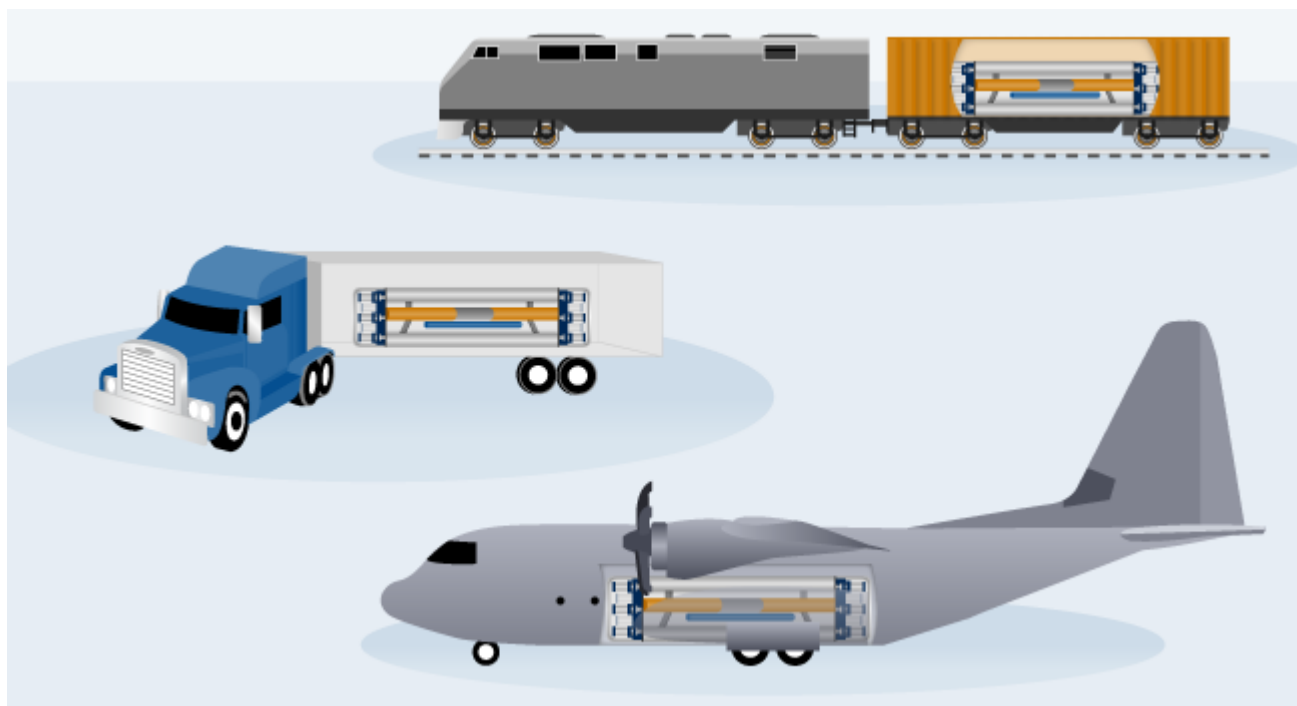
Rep. John Garamendi (D-California), the subcommittee chair, noted in his opening statement the Defense Department is the world’s “largest single consumer of petroleum products,” using more than 85 million barrels of fuel in Fiscal 2017 at a cost of nearly \$8.2 billion. “Such expensive requirements invite risk,” both to frontline troops who need it and those who provide it, he said.

The Pentagon defines operational energy as the energy required for training, moving and sustaining military forces and weapons platforms for military operations. The term includes energy used by tactical power systems, generators and weapons platforms.

For years, the individual services have been exploring alternative fuels, such as the Navy’s Green Hornet project – an F/A-18 Super Hornet strike fighter jet powered by a 50-50 biofuel blend – to save both money and the environment. However, lessons learned in the austere and isolated distances of Iraq and Afghanistan over the last 20 years showed the need not only for alternative fuels, but innovative ways to transport and store energy. Planners expect that need to grow with widely dispersed, highly mobile ships and ground units operating in contested areas of the vast Indo-Pacific region.

In 2015, Russia announced plans to build up to 30 small transportable nuclear reactors for the Arctic to provide

electricity to remote bases under development as part of Russia's Arctic militarization.



Source: GAO. | GAO-20-380SP

An image describing ways to transport a small nuclear reactor, from a GAO report on Project Pele, a DoD effort to design and build a prototype mobile nuclear reactor. *GAO*

Rep. Doug Lamborn of Colorado, the ranking Republican on the Readiness subcommittee raised the issue of small reactors as a promising solution to frontline forces' energy needs, such as Project Pele, the Defense Department's Strategic Capabilities Office project to design, build, and demonstrate a prototype mobile nuclear reactor.

"Anything that allows us the freedom to maneuver, we're obviously very interested in," said Vice Adm. Rick Williamson, the deputy chief of Naval Operations for Fleet Readiness and Logistics. To be able "to divorce the operational fleet from the logistics tether gives us maneuverability. Maneuverability equals survivability."

While the Navy already has very big reactors to power aircraft carriers and submarines, "we have to look at the problem of sustaining the fleet as a whole. That is going to be done both ashore and afloat. So, if there is potential there [in small

reactors], obviously it provides tremendous operational advantage for us,” Williamson said.

“I don’t think we can afford to not explore it within the realm of demand reduction,” Air Force Lt. Gen. Sam Barrett, the Joint Staff Director for Logistics, told the subcommittee.

Think Tank: USAF MQ-9 Reaper Drones Could Assist Arctic, Maritime and Littoral Operations



The Marine Corps' first MQ-9A at an undisclosed location in the Central Command area of responsibility. The MQ-9A completed 10,000 flight hours in support of Marine Corps Forces, Central Command operations on March 31, 2021. *U.S. MARINE CORPS*

ARLINGTON, Va. – The U.S. Air Force wants to retire its MQ-9 Reapers by 2035 but an aerospace think tank says the drone fleet should be retained and modernized for new missions already challenging the sea services, such as maintaining domain awareness in the Arctic.

Facing severe future budget constraints while trying to fund modernization programs like the B-21 long range strike bomber, Air Force planners are considering retiring legacy aircraft they believe cannot survive in a high-end fight, like General Atomics Aeronautical Systems' intelligence, surveillance, reconnaissance (ISR) and targeting drone.

While armed with Hellfire missiles, as well as ISR sensors and cameras, the RQ-9 has no defensive measures, except a counter-jamming pod, to keep it safe in contested airspace.

Rather than send its entire 280-Reaper fleet to the boneyard by 2035, the Air Force should upgrade it for a list of new missions such as air and missile defense, and communications relays, the Mitchell Institute for Aerospace Studies recommends in a paper, "Reimagining the MQ-9 Reaper," by retired Air Force Major Gen. Lawrence Stutzriem.

"Reaper is more relevant today than most of the other aircraft that are in development or on the ramp," Stutzriem, the institute's director of research, told a livestreamed audience at the paper's Nov. 19 virtual rollout. "And there's a broad range of existing and new requirements that it could be used to fill in the future."

The Navy and Coast Guard are focusing on the Arctic region as a contested area fraught with extreme weather conditions, immense distances and limited infrastructure – there is no

port for deep water vessels within 1,000 miles of Alaska's Arctic coast. Coast Guard officials have said communications are sketchy or nonexistent in the latitudes above 72 degrees north, and the Navy has no ice-hardened ships. The Coast Guard has just one heavy ice breaker, and new ones authorized by Congress won't be ready for several years.

Meanwhile, Russia has built or reopened several military bases on islands along its Arctic coastline. Both Russia and China have built new fleets of ice breakers, some of them nuclear powered. Russia's new Ivan Papanin-class multirole, icebreaking patrol vessels can be equipped with cruise missiles.

Recent technological enhancements to the MQ-9 "make it an attractive option for improving Arctic domain awareness," Stutzriem's paper says. General Atomics has tested an extended-wing variant of the Reaper that increases the drone's endurance from 27 to over 40 hours. That would be a significant step for conducting ISR in the vast Arctic region. The MQ-9B SkyGuardian variant features an electro-expulsive de-icing system and an anti-ice heated engine inlet, important qualities for Arctic operations.

The MQ-9 can contribute to emerging high end missions as the U.S. military shifts to a mobile, widely dispersed force in the Indo-Pacific region to counter and deter adversaries, said Bryan Clark of the Hudson Institute, one of three other think tank analysts at the roll out who supported the continuing need for the MQ-9. To impose deterrence by detection, "I think the MQ-9 could contribute there quite a bit," since it has targeting as well as ISR capabilities, Clark said. The Marine Corps has acquired three Reapers after three years of testing and planning with leased aircraft to see how they will fit into the commandant's force design of small units, widely dispersed and armed with long-range fires to control access to sea lanes.

With a targeting mechanism for counter maritime operations, “they’ve got the whole kill chain with missiles ashore, with the naval strike missile, that will allow them to close that kill chain and actually achieve some of that deterrent effect that detection might provide,” Clark said.

Commandant: Many Unvaccinated Marines Swayed by Disinformation



Marines and Sailors continue to receive the COVID-19 vaccine on Marine Corps Air Station Miramar, March 25, 2021. *U.S. MARINE CORPS / Lance Cpl. Rachelanne Woodward*

WASHINGTON – Because the U.S. Marine Corps is the nation’s ready force, the commandant says he is concerned that

“disinformation” has made thousands of Marines reluctant to get a mandatory vaccination against coronavirus.

With a Nov. 28 deadline looming for all active duty Marines to be fully vaccinated, an estimated 13,000 still have not gotten the first shot to counter COVID-19.

“I’m concerned about it because every Marine has to be ready to deploy,” Gen. David Berger said Nov. 4 at the in-person 2021 Aspen Security Forum. “We are the ready force. We have to be ready to go.”

Berger said he could not say exactly why so many Marines haven’t rolled up their sleeves yet. Some have submitted requests for a religious or medical waiver.

“Those are being answered quickly. Within a week, they’ll get an answer back.” However, “Very few have been granted,” he said.

“The ones who flat out refuse? You’d have to ask each individual Marine their reasons why. I think we’re challenged by disinformation,” which Berger said raises questions “about how did this vaccine get approved? Is it safe? Is it ethical?

“All that swirls around on the internet and they read all that. They see all that,” Berger said. But Marines are trained and “taught that your unit is more important than you are.”

Berger is also concerned that 56% of Marines in the Ready Reserve have not been vaccinated. They have until Dec. 28 to do so. Berger said it is difficult to track vaccination rates among reservists because they are spread across the country in local units.

“We are one Marine Corps, active duty and Reserve, so it is important for them to get vaccinated as well,” he said.

Marine Corps Headquarters issued guidance Oct. 23 stating Marines who are not fully vaccinated by the deadline, without

an approved administrative, medical or religious exemption, will be subject, pending appeal, to administrative separation from the Corps.

“A Marine who has not been fully vaccinated is not considered worldwide deployable and shall be assigned or reassigned, locally, to billets which account for health risks to the unvaccinated Marine and those working in proximity to the Marine,” according to the guidance. While their cases are under appeal, Marines who refuse vaccination, could also be barred from re-enlistment, promotion or holding a command.

“The approach we took is: Take all the ambiguity out of it. It’s black and white from the secretary of defense. We need to protect ourselves,” Berger said, explaining the hardline approach. “We wrote that instruction to make it clear all the way down. There is no gray area. You must get vaccinated.”

He noted that Marine recruits already get 12 other vaccinations just to get through boot camp. Berger said he didn’t think the Marines will be losing thousands of Marines after Nov. 28 because of the mandatory vaccination order.

The number of vaccine refusals is changing every day, Berger said.

“Partly because we have a younger force and they wait to see how leaders do. And when the leaders do, they get in line quickly. I think it’s really hard to predict, because it’s not a straight line between now and the end of November.”

CNO Creating Unmanned Systems Task Force to Ensure Reliability, Command and Control



System technicians perform a safety test on a MANTAS T38 Devil Ray unmanned surface vehicle in San Diego Bay for an operational test run during U.S. Pacific Fleet's Unmanned Systems Integrated Battle Problem (UxS IBP) 21. *U.S. NAVY / Mass Communication Specialist 2nd Class Alex Perlman*

ARLINGTON, Va. – Getting the right mix of unmanned air, surface and undersea vehicles in the U.S. Navy's future fleet is so critical, the Chief of Naval Operations is creating an unmanned systems task force to sort out nagging issues like scalability, reliability, command, and control.

In a virtual appearance Sept. 8 at the Defense News online conference, Adm. Michael Gilday said he was unsatisfied with the Navy's pace of unmanned development, citing reservations about the reliability of unmanned vessels for long range, long duration missions, as well as command and control issues.

"Over the next few months, we'll be standing up an unmanned task force," similar in terms of scope and purpose to Project Overmatch, Gilday said. A group of technical experts, along with operators, will focus on problems "to move forward in all three domains, at speed, to make unmanned a reality by the end of this decade."

Gilday likened the new unmanned task force to Project Overmatch, the Navy's plan to develop a new fleet architecture using artificial intelligence (AI) and manned/unmanned teaming to enable distributed maritime operations. Highly mobile and widely distributed Navy and Marine Corps element are a basic

game plan for dealing with near-peer adversaries like China in contested areas of the vast Indo-Pacific region.

As the Navy plans future fleet battle problems, "One of the things I'll be looking for is how we utilize unmanned [systems] at scale into the fleet, because we know that in the future. They're going to be a significant part of distributed maritime operations," Gilday said.

Gilday said the task force will include both Sailors and Navy civilians. "We have a lot of technical expertise in the Navy today that we can leverage," including warfighting labs and systems commands, he said. Still in the early stages of planning, Gilday said he would be able to share more details about the task force "by early 2022."

Gilday, and some key lawmakers, have expressed concern about the reliability of unmanned surface and undersea vessels deployed at sea for extended periods of time with little or no maintenance. The CNO said he's seen progress in that area this year, noting three successful missions by unmanned surface vessels transiting more than 4,000 miles from the Gulf Coast, through the Panama Canal to California, while operating autonomously 98% of the time. However, "we're not yet satisfied where we need to be with respect to reliability but we are quickly moving in that direction" although it's still a few years before the Navy can go to the Pentagon and Congress with a plan to produce unmanned vessels at scale.

Concerns about command and control over unmanned systems was the genesis for Project Overmatch, Gilday said. With an initial plan to have a third of the fleet unmanned or minimally unmanned "we knew we couldn't command and control, let's say well over 100 vessels, without changing the way we were networked," the CNO said.

"I do think as we look at AI applications for unmanned, it's going to be a journey for us before we talk about an

autonomous, unmanned fleet,” Gilday said. Initially, such platforms will be minimally manned or teamed with manned vessels. “The man in the loop is going to be an important piece for a while,” he said.

The U.S. Naval Forces Central Command (NAVCENT) also will establish a new task force to accelerate integration of unmanned systems of all domains and artificial intelligence, the NAVCENT commander [said recently](#).

Vice Adm. Brad Cooper, commander, U.S. Fifth Fleet and commander, U.S. Naval Forces U.S. Central Command, speaking Sept. 8 to reporters by phone conference, said Task Force 59 (TF59) would be established on Sept. 9 in Manama, Bahrain.

STRATCOM Chief: China's Nuclear Buildup a 'Strategic Breakout' Requiring U.S. Strategic Rethinking



U.S. Navy Adm. Charles A. Richard, commander of U.S. Strategic Command (USSTRATCOM), provides remarks during the 24th annual Space and Missile Defense Symposium at the Von Braun Center in Huntsville, Alabama, Aug. 12. *U.S. NAVY / Capt. Ron Flanders*
ARLINGTON, Va. — The Chinese government's rapid military buildup across all domains is a “strategic breakout” from its minimum deterrent nuclear posture to one that can coerce other nations, the commander of U.S. strategic forces warned Aug. 25.

Rapid expansion of intercontinental ballistic missile (ICBM) silos, road mobile ICBMs, six or more Jin-Class ballistic missile submarines carrying nuclear weapons that can reach the continental United States from the South China Sea, and bombers armed with air-launched ballistic missiles have given China a “true triad” of sea, air and land nuclear capability, Adm. Charles Richard, head of U.S. Strategic Command said.

In a virtual conversation with Hudson Institute Senior Fellow Rebecca L. Heinrichs, Richard said that amounted to a “final brick in the wall, a final piece of capability designed to build a military that is capable of coercion.”

Given the changing threat environment, “right now is the ideal time” for Defense Secretary Lloyd Austin’s planned reviews of the national defense strategy, nuclear posture and missile defense, Richard said. “We have never before had two peer nuclear-capable opponents [Russia and China] that have to be deterred at the same time, [but] we have to deter differently.”

Russia remains the strategic and nuclear pacing threat “at least for a little bit longer,” with over 2,000 non-treaty constrained warheads and novel capabilities like hypersonic weapons, Richard said.

The United States is developing its own hypersonic weapons. The Navy plans to first deploy Conventional Prompt Strike (CSP) capability hypersonic missiles on Zumwalt-class guided missile destroyers and later, Virginia-class Block 5 submarines. STRATCOM has both strategic deterrence and nuclear deterrence as missions.

“If we had this [hypersonic] capability, it would enable us to accomplish strategic deterrence better than what we can do using the nuclear effect alone,” Richard said.

STRATCOM “will be ready to receive the first service hypersonic capability at intercontinental range the day they

make it available," he said. "We are already working the concepts. I have the targeting. I have the command and control."

Analysts studying commercial satellite images in recent weeks have discovered the Chinese government is building two large fields of ballistic missile launching silos in the country's western desert, but U.S. officials including Richard, have not commented directly on the development.

The STRATCOM chief said it is not enough to plan around all the missiles, submarines and other weaponry the People's Liberation Army already has.

"It would not be a wise assumption to think somehow 'They're done,'" Richard said, explaining that officials should not lose sight of "What is the next thing we're going to find, and where does this end?"

Pentagon: FDA Vaccine Approval Opens Way for Mandatory Military Vaccinations



U.S. Navy Hospital Corpsman 2nd Class Orbie VanCurine, a native of Mansfield, Texas, with Combat Logistics Battalion 22 (CLB-22), prepares a COVID-19 vaccine during the opening of the state-run, federally supported Center City Community Vaccination Center at the Pennsylvania Convention Center in Philadelphia on March 3, 2021. *U.S. MARINE CORPS / 1st Lt. Kevin Stapleton / Combat Logistics Battalion 22*

ARLINGTON, Va. – The U.S. Food and Drug Administration's approval of the Pfizer-BioNTech COVID-19 vaccine paves the way for the Defense Department to require all military personnel to be vaccinated against the coronavirus strain, officials say.

Because the three available anti-COVID vaccines were only approved for human application by the FDA under an emergency use authorization (EUA), no one – including members of the military – could be compelled to get vaccinated. More than 73% of active duty personnel had received at least one shot of the vaccines by mid-August. However, thousands more service men and women declined to roll up their sleeves for inoculation.

"Now that the Pfizer vaccine has been approved, the department is prepared to issue updated guidance requiring all service members to be vaccinated," Pentagon Press Secretary John F. Kirby told reporters Aug. 23. He said a timeline for completing vaccination of the total force would be provided in coming days.

"We're going to move forward, making that vaccine mandatory," Kirby said. "We're preparing guidance to the force right now. In other words, how we want to see it get done. We're working through that right now."

Kirby noted Defense Secretary Lloyd Austin announced Aug. 9 that with the increasing spread of more lethal COVID variants, he intended to mandate vaccination as soon as the FDA licensed one of the three available anti-COVID vaccines from Pfizer, Moderna or Johnson & Johnson. If none received FDA licensure by mid-September, Austin said he would seek a waiver from President Joe Biden to make vaccination mandatory for the military, which Biden indicated he would grant.

In announcing FDA approval of the Pfizer vaccine for the prevention of COVID-19 in individuals 16 years of age and older, acting FDA Commissioner Dr. Janet Woodcock said, "the

public can be very confident that this vaccine meets the high standards of safety and effectiveness, and manufacturing quality the FDA requires of an approved product.”

For service members with religious objections to receiving the vaccine, exemptions are governed by the individual military services’ regulations, Kirby said Aug. 10, adding there are provisions for medical exemptions to mandatory vaccination, including pre-existing medical conditions.

Meanwhile, the number of COVID-19-related deaths among uniformed personnel has climbed to 34 as of Aug. 18, including the first death in the Marine Corps.

Sgt. Edmar J. Ismael died on Aug. 14 in Seattle due to complications related to COVID-19. Ismael, 27, a native of Alaska, was an electrician assigned to Support Platoon, Engineer Support Company, 8th Engineer Support Battalion, II Marine Expeditionary Force, according to a Marine Corps statement.

Across the uniformed services there has been a total of 222,138 cases of COVID-19, resulting in 1,998 service members requiring hospitalization while 211,034 have recovered.

While Useful Tools, Unmanned Systems Don’t Equal Presence in Arctic, Coast Guard

Adviser Says



The Coast Guard Cutter Polar Star (WAGB 10) breaks ice in the Chukchi Sea, Saturday, Dec. 26, 2020. *U.S. COAST GUARD / Petty Officer 1st Class Cynthia Oldham*

NATIONAL HARBOR, Md. – Unmanned systems may be a solution for handling dirty, dull or dangerous tasks in the Arctic, but they're no substitute for a U.S. flagged ship when it comes establishing presence in the Far North, a Coast Guard Arctic expert says.

"Unmanned systems are a great tool but they don't deliver presence," according to the Coast Guard Senior Arctic Advisor Shannon Jenkins. "Presence is a U.S. flagged [manned] sovereign vessel," Jenkins told an Aug. 3 exhibit booth briefing at the Navy League's Sea-Air-Space expo at National Harbor, Maryland. "You can't surge into the Arctic. You have to be up there."

Coast Guard Commandant Adm. Karl Schultz has said repeatedly that "presence equals influence in the Arctic" to counter a resurgent Russia, and China – which styles itself a "near Arctic nation" – from ignoring the rules-based international order and modern maritime governance as they have done in other regions like the Black and South China seas.

Maritime domain awareness in the Arctic requires more than periodic exercises. It is important to understand how the environment is changing, Jenkins said, "So that we're better prepared for when industry changes their operations up there, so we can be prepared to be up there and regulate, enforce and protect those operations as well as the U.S. citizens up there."

The U.S. exclusive economic zone (EEZ) in the waters off Alaska and the Aleutians is greater than all other American EEZs along the Pacific, Atlantic, Gulf coasts and U.S.

territorial waters in the Central Pacific and the Caribbean. "That's a lot of water," Jenkins said, "so we have to go where the activity is." That includes going where the fishing fleets, the cruise ships and the oil and gas explorers operate as climate change melts polar sea ice, opening up new sea lanes across the top of the world in summer as well as access to mineral resources and fish stocks long-hidden beneath the ice.

The Russian fishing fleet has begun experimental fishing in the Chukchi Sea, north of the Bering Strait "and that means the Coast Guard is going to be up there to monitor," Jenkins said. Among worldwide fishery production, Alaska ranks seventh, and the six larger producers are all nation states, he said. [Illegal, unlawful and unlicensed fishing is replacing piracy](#) as the top global maritime security threat facing the nation, according to the Coast Guard.

"We're going to need ice breakers, more ships, more planes, more helicopters, more people," Jenkins said, adding those systems and platforms have to be able to operate in the austere conditions of the Arctic. "There's a lot of icing and extreme winds. With unmanned aerial systems, we've had issues deploying in that region. Wind factors are just too great," said Jenkins. "It's also an access issue. That's where the ice breakers are so essential. They're our floating infrastructure."

The Coast Guard currently has only two operating ice breakers, both of them old. Congress has provided funding for the first two Polar Security Cutters (PSCs), which will be heavy icebreakers. A contract was awarded to VT Halter in 2019 for the first PSC. Delivery is expected in 2026, Jenkins said.

Navy Surgeon General: Outbreak on Aircraft Carrier Paved Way for Devising Effective COVID-19 Response



U.S. Navy Sailors assigned to aircraft carrier USS Theodore Roosevelt (CVN 71) are screened for symptoms of COVID-19 in this 2020 photo. *U.S. MARINE CORPS / Staff Sgt. Jordan E. Gilbert*

NATIONAL HARBOR, Md. – The outbreak of COVID-19 on a forward-deployed U.S. aircraft carrier helped Navy medical personnel learn how to fight the virus at sea and prevent its spread ashore, the Navy Surgeon General says.

“Our wakeup call was the Theodore Roosevelt,” Rear Adm. Bruce Gillingham told a panel discussion on the coronavirus pandemic at the Navy League’s Sea-Air-Space Expo in National Harbor Aug. 4.

After COVID-19 was detected among the crew following a port call at Da Nang, Vietnam, in March 2020, the USS Roosevelt was sidelined at Guam for months.

The data gathered by a deployed medical unit aboard the stricken carrier, where more than one thousand crew members tested positive for COVID-19 in early 2020, and one died, “helped us understand the behavior of the virus,” Gillingham said. “It was from that investigation that we really learned the role of pre- and asymptomatic transmission of COVID and how critically important it was to understand and prevent that.”

More than 76% of the crew who tested positive for COVID were not showing symptoms of the virus when tested, and only 55%

later developed any symptoms.

With the experience gleaned from the Roosevelt and a smaller outbreak on the destroyer USS Kidd, “we were able to learn how to diagnose, quarantine and isolate in a shipboard environment, the surgeon general said. That led to a search for ways to create bubbles to manage the risk of COVID for forward deployed personnel, including restriction of movement for 14 days before deployment and testing personnel coming out of quarantine.

Another study by Navy scientists looked at Marine Corps recruits at Parris Island Marine Corps Recruit Depot to assess the response to the virus of healthy young adults in a tightly controlled, congregate setting. “Even in that environment, about one-sixth of recruits still became infected,” Gillingham said.

Both the Parris Island and Roosevelt/Kidd research findings were published in the New England Journal of Medicine. “I’m proud our folks were able to contribute to the national discussion on how to defeat COVID,” he said.

Another panelist, Rear Adm. Dana Thomas, director of Health, Safety & Work-Life at the Coast Guard, said it is also crucial to monitor the mental and emotional health of personnel working under the trying conditions imposed by the pandemic.

In field communications, “I established, early on, Wellness Wednesdays,” hour-long panel sessions with chaplains, doctors and others to talk about stress and anxiety, “bringing that conversation into the ward room or the workplace,” she said.

“That was one thing we will continue as a best practice,” said Thomas, who is also an admiral in the U.S. Public Health Service Commissioned Corps.

After 3 Explosive Events of its Shock Trial, USS Gerald R. Ford Will be on Track for Operational Tasking in 2022, NAVSEA Says



USS Gerald R. Ford (CVN 78) successfully completed the second of three scheduled explosive events for full ship shock trials (FSST), July 16, 2021. *U.S. NAVY / Mass Communications Specialist Seaman Jackson Adkins*

NATIONAL HARBOR, Md. – With a third and final Explosive Event of a Full Ship Shock Trial (FSST) to go, and after an analysis and repairs if needed, the U.S. Navy's newest aircraft carrier, USS Gerald R. Ford (CVN 78), will be ready for operational tasking by 2022, according to a Program Executive Office – Carriers official.

Upon completion of the last Explosive Event later this summer, Ford will enter a planned incremental availability for six months of modernization, maintenance and repairs prior to its operational use.

The Ford, the first of a new super carrier class, currently cannot accommodate the Navy's carrier-based F-35C Lightning II joint strike fighter without upgrades. The Navy plans to complete the upgrades for the F-35C before the carrier is scheduled to operate with the aircraft.

Last year, the Navy announced F-35C modifications to the future USS John F. Kennedy (CVN 79), the second Ford-class

carrier, under a contract employing a single-phase acquisition strategy, instead of the originally planned two-phase strategy.

The Navy previously planned to build CVN 79 in two phases, putting the ship's combat systems in "at the last minute to avoid obsolescence," said Kevin Cormier, deputy program manager, PEO Aircraft Carriers told an exposition floor briefing at the Navy League's Sea-Air-Space Expo in National Harbor, Maryland, Aug. 3.

After considering the combat systems' delivery schedule, however, "the Navy made a decision that it was more prudent" to deliver a whole ship in 2024, Cormier said. "Right now, we are on track for 2024 delivery with the new Enterprise Air Surveillance Radar (EASR) and new Joint Strike Fighter models."

Cormier said the next Ford-class carrier, CVN 80, is about 10% complete with keel laying expected in February 2022. CVN 80, slated to be the future USS Enterprise, is part of a two-ship one buy Cormier said saved taxpayers \$4 billion. The next Ford carrier, CVN 81, is "tracking for a 2032 delivery," he said.

Coast Guard Sees Many Uses for Unmanned Systems in the Arctic Environment



Coast Guard Cutter Healy deckhands prepare to lower an unmanned underwater vehicle, operated by the Woods Hole Oceanographic Institute, into the Beaufort Sea during a

simulated spilled oil response and recovery exercise, Sept. 10, 2013. WHOI scientists used the UUV to monitor ice conditions from below during the simulated exercise. *U.S. COAST GUARD* / Petty Officer 3rd Class Grant DeVuyst
NATIONAL HARBOR, Md. – First sought to extend the reach of Coast Guard cutters in the Pacific Ocean, the service is exploring the use of unmanned aerial, surface, and undersea systems in the harsh and distant environs of the Arctic.

“Numerous types of platforms could be extremely valuable in the Arctic,” U.S. Coast Guard Capt. Thom Remmers told a, exposition floor briefing Aug. 2 at the Navy League’s Sea-Air-Space expo in National Harbor, Maryland.

Remmers, the Unmanned Cross-Functional team lead for the Coast Guard’s Directorate for Capabilities (CG-7), said underwater vehicles could “very easily and capably look for environmental spills.”

The Coast Guard partnered with Woods Hole Oceanographic Institution in Massachusetts to operate a 250-lb. long-range autonomous underwater vehicle (LRAUV), Polaris, developed by the institute for just purpose, he said. “It demonstrated a search for oil spills under the ice in the Arctic,” he added.

Remmers said the Coast Guard has also deployed unmanned aerial vehicles on some icebreakers, like the Coast Guard Cutter Healy, “primarily by tactical commanders to look for ice floes,” he added.

“Those types of needs are not unique to the Arctic,” Remmers said, “but they’re much more valuable when you start looking at access in that region.” Unmanned systems could also provide “a long-range persistent MDA [maritime domain awareness] type of capability that we need up there,” he said.