



SURFACE SITREP



THE OFFICIAL SURFACE NAVY ASSOCIATION NEWSLETTER

VOL. XXXIX #3

FALL 2023

Task Force LCS Focuses on Stability, Reliability and Sustainability

An Interview with RADM Ted LeClair, USNR, Deputy Commander, Naval Surface Force U.S. Pacific Fleet and Director of Task Force LCS

BY CAPT EDWARD LUNDQUIST, USN (RET)

What's happening today with the littoral combat ships and the surface force? Are we deploying these ships to support the combatant commanders?

We have a 2.0 presence requirement in SOUTHCOM that we're meeting today. We have one ship in Sixth Fleet now that's headed to Fifth Fleet. And when Canberra crosses the International Dateline on her way to Sydney, we will have six Independence-variant littoral combat ships in the western Pacific for the first time. We're talking scale now--real numbers--not onesies or twosies, but six at one time.

What missions are they undertaking?

They are completing assigned missions from the fleet commander, whatever they may be, and they're all different. They're performing missions like other combatants, as well as some missions more suited for LCS than a larger ship like an Arleigh Burke DDG.

With the exception of Fort Worth, are all of the West Coast ships Independence variants?

Yes, Fort Worth is a test ship and still here on the west coast. But we have plans to move her to Mayport. All of the Mayport-based LCS are Freedom variants. Right now, the Fourth Fleet, Fifth and Sixth fleet deployers come from Mayport, and the Seventh Fleet LCS come from San Diego. By FY 25, there will be Independence variants in fifth Fleet.

LCS was originally a focused mission ship, capable of embarking one of three mission packages, depending on what the COCOM needed. That's changed.

Correct. The Mayport ships are configured for the ASUW mission, and the San Diego ships have the mine warfare package. The program of record is that the Independence class ship will only have the MCM mission package certified on it. The Freedom variant, as of now, won't be certified with the MCM mission package. That doesn't mean she couldn't be in the future. The ASW mission package has been cancelled.

You are the director of Task Force LCS. What is your primary focus?

I have been focusing on stability. There's so much churn that had gone into the program. Leadership wants a level of stability, all the way down to the sailors. So, in that spirit, we've continued to



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Defeating Deadly Sea Mines and Taking the Sailor Out of the Minefield

BY CAPT GEORGE GALDORISI, USN (RET)

For centuries, sea mines have presented an affordable and effective option in naval warfare. That threat remains today. However, what is equally concerning is the recent use of sea mines by terrorist groups and other non-state actors who have used these cheap and plentiful weapons to hazard commercial vessels and disrupt commerce on the oceans.

A Persistent Centuries Old Challenge

Mine warfare is not new. Precursors to naval mines were first invented by innovators of Imperial China. The first plan for a sea mine in the West was drawn up by Ralph Rabbards, who presented his design to Queen Elizabeth I of England in 1574. Since the invention of the Bushnell Keg (a watertight keg filled with gunpowder that was floated toward the enemy, detonated by a sparking mechanism if it struck a ship) in 1776, mine warfare has been an important element of naval warfare. While the first attempt to deliver the Bushnell Keg from America's first combat submarine, the Turtle, against a British warship in 1776 failed, subsequent attempts to employ these early mines were successful. Not only did they damage a British schooner and kill several British seamen, but the threat caused British capital ships-of-the-line to redeploy to avoid these mines.

Over 150 years ago, Admiral David Farragut became famous for "damning torpedoes" (mines) at the entrance to Mobile Bay during the Civil War. Indeed, in the early stages of the Civil War, Admiral Farragut wrote to Secretary of the Navy Gideon Welles, about the sea mine threat posed by the Confederacy, stating, "I have always deemed it unworthy of a chivalrous nation, but it does not do to give your enemy such a decided superiority over you." Farragut's warning was eerily prescient.

The use of sea mines and countermeasures to these weapons have figured significantly in every major armed conflict and nearly every regional conflict in which the United States has been involved since the Revolutionary War. Mine warfare is an essential warfare capability integral to the ability of naval forces to open and maintain sea lines of communication and to dominate the littoral battlespace.

The naval mine has been a mainstay of modern warfare. The North Sea Mine Barrage, a large minefield laid by the U.S. Navy and Royal Navy between Scotland and Norway during World War I, inhibited the movement of the German U-boat fleet. During World War I more than one thousand merchant and warships were lost because of the 230,000 mines used. NATO navies continue to clear these mines today.

Mines released by U.S. Navy submarines and dropped by U.S. Army Air Forces B-29 bombers in the Western Pacific during World War II sank hundreds of Japanese warships, merchant ships, and smaller vessels. During World War II 2,665 ships were lost or damaged by 100,000 offensive mines.

In Korea during the early 1950s, the Soviets provided North Korea with thousands of sea mines. These were used to defend Wonsan Harbor. During the Vietnam War, over 300,000 American naval mines were used. In 1972 Haiphong Harbor was seeded with 11,000 destructor mines and was shut down completely for months, and it took years to clear out all the American mines.



Devil Ray with LCS in foreground.

In the past several decades, rogue states have indiscriminately employed sea mines. Libya used mines to disrupt commerce in the Gulf of Suez and the Strait of Bab el Mandeb. Iran laid mines to hazard military and commercial traffic in the Arabian Gulf and Gulf of Oman. During Operation Desert Storm in 1990-1991, the threat of mines precluded the effective use of the Navy and Marine Corps expeditionary task force off Kuwait and hazarded all U.S. and coalition forces operating in the Arabian Gulf. The threat posed by mines was so extensive that clearance operations in this confined body of water were not completed until 1997. Indeed, Operation Desert Storm highlighted the importance of mine warfare with the near catastrophic damage to USS *Samuel B. Roberts* (FFG 58), USS *Princeton* (CG 59) and USS *Tripoli* (LPH 10).

Today's Ongoing Mine Challenge

Fourteen U.S. Navy ships have been sunk or damaged by mines since World War II, over three times the number damaged by air and missile attack. Today, mine warfare remains a critical element of naval warfare capability. In terms of availability, variety, cost-effectiveness, ease of deployment and potential impact on naval expeditionary operations, mines are some of the most attractive weapons available to any adversary determined to prevent Joint or coalition forces from achieving access to sea lines of communications or the littorals.

Worldwide proliferation of mines compounds this challenge. The number of countries with mines, mining assets, mine manufacturing capabilities, and the intention to export mines has grown dramatically over the past several decades. More than fifty countries possess mines and mining capability. Of these, thirty countries have demonstrated a mine production capability and twenty have attempted to export these weapons.

The use of sea mines adjacent to maritime choke points presents a threat that is at once ubiquitous and deadly. Mines represent one of the most vexing military challenges. Sea mines are hard to find, difficult to neutralize, and can present a deadly hazard to any vessel—even those ships specifically designed to hunt them.

While many analysts evaluate the ability of the United States to deal with peer adversaries such as China and Russia in terms of cutting-edge technologies such as hypersonic missiles, directed energy weapons, fifth- and sixth-generation fighters, artificial intelligence, machine learning and other advances, both of these nations are likely to employ mines in any conflict with the United States.

In a comprehensive article in the *Naval War College Review*, naval analyst, Dr. Scott Truver, highlighted the danger posed by China's mine warfare capabilities as well as those of other potentially hostile nations where he noted:

The mine warfare experiences of America and other nations are not lost on the People's Liberation Army Navy (PLAN). Chinese naval analysts and historians understand the asymmetric potential for mine warfare to "baffle the enemy, and thus achieve exceptional combat results." Mines provide what some have described as affordable security via asymmetric means.

In an interview in *National Defense Magazine*, Seth Cropsey, Director of the Center for American Seapower at the Hudson Institute, highlighted the mining capabilities both China and Russia would bring to the fight. He focused primarily on the threat from China, noting:

One of the top global mine threats comes from China. It has been estimated that Beijing has as many as 100,000 such weapons. Those range from the old-fashioned moored contact mine to include mines that have rocket-propelled weapons and target detection systems. In the event of a conflict with China, the United States is unlikely to approach warfare from the land. That leaves us with the seas as the place of where conflict is most likely to play out.

Beijing would likely concentrate on creating choke points in areas such as the archipelagos that separate East Asia from the Middle East and the South China Sea. That means that sea control and navigating around China's anti-access and area denial capabilities will be crucial. It's reasonable to expect that the Chinese would use mines there, and reasonable to expect that they would use mines if they decided to use force against Taiwan. Moving through those straits is crucial and being able to clear them of mines is equally important.

The danger of naval mines is especially acute in the Mideast. In October 2020, a Maltese-flagged tanker was damaged by a mine

while taking on crude oil the Yemeni port of Bir Ali. MV Syra reportedly suffered significant damage, resulting in an oil spill. Shortly after this event, in November 2020, a mine in the Red Sea off the coast of Saudi Arabia near Yemen exploded and damaged a Greek oil tanker. In December 2020, a Singapore-flagged tanker berthed at the Saudi Arabian port city Jeddah was damaged by a mine, with Houthi militia from Yemen strongly linked to this attack. In January 2021, an oil tanker off the coast of Iraq discovered a mine attached to its hull. Regional navies, assisted by U.S. and U.K. navies, have stepped up mine countermeasures exercises in the Arabian Gulf. Most recently, France, the United Kingdom and the United States conducted the Artemis Trident MCM Exercise in Arabian Gulf.

As part of the 2022 Russian invasion of Ukraine, Russia mined the waters off the Crimean Peninsula. Russia expected to win its war quickly, but when that did not happen, some of those mines either broke loose or were cut loose and drifted into shipping lanes used by Ukrainian and NATO ships. Russia has continued to use sea mines extensively during the conflict in Ukraine. One of the most prominent examples involved Russian forces laying mines in along the Dnieper River to the north of Kherson city to make it harder for the Ukrainians to cross. Other incidents have included Russian drifting mines that have been found along the coasts of Turkey and Romania, as well as elsewhere in the Black Sea. Russia claims that they were anchored to the seabed but broke free of their cables due to bad weather. An Estonian cargo ship in the Black Sea has already been sunk by a Russian mine during this war, though it's unknown whether the mine was fixed or drifting. More recently, in February 2023, Turkish media outlets claimed that a drifting sea mine exploded near Agva on the Black Sea coast.

The worldwide proliferation of mines has become so dire that naval professionals are identifying the magnitude of the problem and calling for a near-term solution. Writing for the *U.S. Naval Institute Blog*, Lieutenant Commander Jon Paris, an officer who has served on cruisers, destroyers and minesweepers, put the challenge this way:

The U.S. Navy is focused on high-end warfare—engaging anti-ship cruise missiles, defeating hypersonic weapons, protecting the homeland and allies from ballistic missiles, and operating the air wing far from shore in a command-and-control degraded environment. We are focused on defeating those we sometimes still call "near-peer" competitors. Our fleet's muscle will not make it to the high-end fight, though, if it fears the deceptively destructive naval mine.

Mines are inexpensive. They present a fiscally efficient option to foes with a substantial return on investment. They are easy to deploy and are difficult to combat. They are stealthy and disrupt the world's sea lanes and are built to guarantee a mission kill. Just the threat of their use or the rumor of their presence has immediate tactical and strategic impact, whether it is merchants avoiding chokepoints or harbors, causing untold damage to the economy, or billion-dollar naval vessels held at arm's length, allowing belligerents to buy time and achieve objectives.

A month later, another serving naval officer, Lieutenant John Miller, said this in his first-place prize-winning essay in the *Naval Institute's Mine Warfare Essay Contest*:



Devil Ray with USN and USCG ships.

The U.S. Navy knows that its current adversaries pose a substantial offensive mining threat. Russia, China, and Iran each possess—and too often export—an advanced, robust, and mature offensive mine capability. The U.S. Navy must consider if it has the speed and resources with which to respond to restore freedom of maneuver in the event of sustained mining.

The ability of the U.S. Navy to deal with the threat of sea mines is not getting better; it is getting worse, because the trend lines are moving in the wrong direction. The platforms that embody the U.S. Navy's primary mine countermeasures (MCM) capability—the MH-53E AMCM aircraft and the Avenger-class minesweeper—are scheduled to sunset in the next few years, which will leave the totality of the Navy's MCM capability in the discrete number of Littoral Combat Ships (LCS) to be outfitted with the Mine-Countermeasures Mission Module.

This is not the MCM capability needed by a global navy. Nor is it a solution that eliminates the extreme danger to Sailors who are forced to work in a minefield to accomplish their mission. It is long past time to stop purposely hazarding U.S. Navy sailors. Fortunately technology has advanced to the point that, with the proper commitment, the Navy can conduct MCM remotely by leveraging unmanned systems.

Leveraging Unmanned Technologies to Defeat Deadly Sea Mines

For all navies, there is only one way to completely, "Take the sailor out of the minefield," and that is to leverage unmanned technologies to hunt and destroy mines at a distance. As naval analyst Norman Friedman pointed out in a piece for *Defense Media Network*, "Gulf War 20th: Naval Lessons of the Gulf War," the severe damage done to U.S. Navy ships, USS *Samuel B. Roberts* (FFG 58), USS *Tripoli* (LPH 10) and USS *Princeton* (CG 59) by simple sea mines is something that must be avoided in the future.

In his first-prize essay in the U.S. Naval Institute Mine Warfare Essay Contest, Lieutenant Ridge Alkonis, a Surface Warfare Officer who served a tour at the Surface and Mine Warfighting Development Center in San Diego, said this about the need for the Surface Navy to leverage autonomous MCM systems:

Mine hunting, finding, and sweeping are not marginal operations. The assets performing these missions must undertake careful thought and preparation, as countering mines cannot be made easy, cheap, or convenient. With the current mine countermeasures (MCM) force limited in personnel, material, and money, the Navy needs a new concept of operations that relies more on automated unmanned systems.

It is not a lack of "want," or even a lack of money (although MCM funding has lagged other procurement priorities) that has impeded the Navy's efforts to "Take the Sailor out of the minefield," but rather, not having adequately mature technology to address the challenge. In the past, unmanned vehicle technologies were not mature enough to be considered to take on the complex mine-hunting and mine-clearing task. They are today.

While a complete end-to-end technical description of all the details of the solution to the Navy's MCM challenge is beyond the scope of this article, it is important to emphasize that the components of this system-of-systems are not based on just concepts or drawings or early-stage prototypes. Rather, every component has been in the water and tested in the operational environment.

While this mine countermeasures solution is designed to accommodate



Devil Ray and Saildrone in Gulf of Aqaba.

various towed sonars and MNS ROVs, the following description is based on these three leading candidates as sub-components of this system-of-systems that will deliver a single-sortie autonomous mine countermeasures, autonomous target recognition, mine neutralization solution. The basic elements of this solution include:

- **The MARTAC Devil Ray T38** is intended as the autonomous platform for the package, and will host a communications and data transmission hub, in addition to above water and underwater sensors.
- **The ThayerMahan Sea Scout Subsea Imaging System** is specifically designed for missions such as mine hunting. The Sea Scout system is founded on the in-production COTS Kraken Robotics Katfish-180 tow-body mounted synthetic aperture sonar. The system is designed to search for mine-like objects (MLOs) and is integrated by ThayerMahan's remote operations and communications system.
- **The Pluto Gigas MNS ROV** is an existing, stand-alone, third-generation MNS with several systems deployed globally, and over 3,000 mines destroyed. The Pluto Gigas deploys an acoustically armed and detonated countermine charge that is low-cost both in initial production and logistics and sustainment. Several charges will be loaded onto the T38 to enable single-sortie field clearance.

The MCM package will be operated from a Control Console and Watch-Stander Station. The overall principle of this MCM Solution design is to incorporate mature hardware that will not impact the host platform in execution of the MCM mission. To that end, the weight and outside dimensions of the Mission Package are within a few inches of the dimensions of a common 11-meter RHIB and launch and recovery should be easily accomplished using standard naval small craft handling procedures for the host vessel.

While this MCM solution is component agnostic, the leading commercial-off-the-shelf candidates for the initial solution were chosen based on their technical maturity, as well as their current use by various navies and other entities. Leveraging these COTS systems will enable this MCM solution to move forward at an accelerated pace in order to deliver a Speed to Fleet capability in the near term.

The Need to Take Action Today to Address the MCM Challenge

Because ships and Sailors operate daily in harm's way, The U.S. Navy and Marine Corps—and by extension other allied navies—would be well-served to accelerate their efforts to deal with

deadly sea mines. The essential components for such a system exist today, and a robust COTS MCM solution can reach fruition in the near-term.

It is time to put a near-term solution in the hands of Sailors. While programs of record are developing next-generation technology, navies should invest in parallel-path solutions that leverage mature subsystems ready to provide speed-to-capability today. Once sailors see the COTS solution that can be delivered with the system described above, the U.S. Navy—as well as other navies with the foresight to embrace such a system—will have an effective way to defeat today's deadly sea mine threat.

To be clear, this is not a platform-specific solution, but rather a *concept*. When operators see a capability with any unmanned COTS platforms in the water successfully performing the MCM mission, they will likely press industry to produce even more-capable platforms to undertake the autonomous mine-hunting and mine-clearing task and take the Sailor out of the minefield.

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HISTORY OF SNA

Surface Navy Association (SNA) was incorporated in 1985 to promote greater coordination and communication among those in the military, business, and academic communities who share a common interest in Surface Warfare while supporting the activities of Surface Naval Forces.

MISSION

We are an Association at the center of Surface Warfare. We provide our members support, programs, & various activities that enable professional growth, personal satisfaction, and camaraderie.

PURPOSE

- *Recognizing* the continuing contributions of the United States Navy & Coast Guard's Surface Forces in regards to the security of the United States
- *Showcasing* professional excellence within the Surface Naval Forces
- *Dealing* with the challenges that are faced as Surface Naval Forces in regards to National Security
- *Nurturing* communication among military, academic, and business communities
- *Enhancing* and Preserving the Heritage of Surface Naval Forces
- *Providing* forums on professional matters affecting Surface Naval Forces and the United States Navy and Coast Guard