

Latent Lethality: Offensive Mine Warfare Sees Renewed Focus in Era of ‘Great Power Competition’



A Mark-63 Quickstrike Mine is mounted on a P-3 Orion aircraft. U.S. Navy/Mass Communication Specialist 2nd Class Jakoeb Vandahlen

The

focus of the U.S. Navy’s efforts in mine warfare over the last two decades has

been mine countermeasures (MCM) – locating and neutralizing hostile mines. New

airborne systems such as the Airborne Laser Mine-Detection System and the

Airborne Mine Neutralization System were developed, and the MCM Mission Package

for the littoral combat ships includes new systems, some unmanned, to “take the

man out of the minefield,” as proponents call the overall focus of the effort.

The efforts are well-needed: Since World War II, mines have sunk more U.S. Navy

ships than any other weapon.

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With

MCM modernization efforts well underway, the changing world geopolitical

situation is bringing new emphasis of the other aspect of mine warfare –

offensive mining – that has not seen such attention since the

end of the Cold

War. The rise of Russia and China and the modernization of their navies has

marked the return of an era of “Great Power Competition” has brought offensive

mining from a dormancy to renewed emphasis and development of new sea mines.

Sea

mines – sometimes called “weapons that wait” – have a strong deterrent effect

on shipping. With sensitive magnetic, acoustic or contact fuses and hiding in

waters where they are difficult to detect, their covertness and lethality have

a strong effect on the morale and effectiveness of ship crews and can shut down

harbors and transit lanes from shipping more effectively than other methods,

effecting a blockade.

Sea

mines are an ancient technology, but came into widespread use in World War I,

when 235,000 sea mines were laid by the belligerents’ ships and submarines. During

World War II, between 600,000 and a million sea mines were laid by the

belligerents. During World War II, aircraft, finally powerful enough to carry a

payload of mines, became the dominant mine-laying platform.

The

United States’ use of aircraft to conduct offensive mining achieved some

extraordinary successes during World War II. U.S., British and Australian

aircraft mined the Yangon River in Burma, inflicting severe

losses on Japanese merchant shipping in February 1943. Navy TBF torpedo bombers mined the harbor of Palau in March 1944, closing the harbor for 20 days and bottling up 32 ships, which were sunk or damaged by airstrikes.



Aviation Ordnanceman 1st Class Sam Money (left) instructs Sailors in identifying the components of an MK 62-63 Quickstrike training mine in the forward magazine aboard the aircraft carrier USS George Washington (CVN-73). U.S. Navy/Mass Communication Specialist Seaman Apprentice Justin E. Yarborough

The most successful aerial mining offensive was Operation Starvation, the campaign to cut off the Japanese homeland from food and other supplies brought by shipping. Beginning in March 1945, 160 U.S. Army Air Force B-29 bombers were used to lay 12,000 mines in and near Japanese waters. At a cost of 15 B-29s lost in the operation, 293 Japanese merchant ships were sunk by the mines.

According to the U.S. Strategic Bombing Survey, one in 21 air-laid mines struck a ship, compared with one in 12 submarine-laid mines. Even though the submarine-laid mines were more effective, the aerial mining proved to be 10 times less expensive per tonnage sunk.

The U.S. Navy used offensive mining to good effect during the latter stages of the Vietnam War. During Operation Pocket Money in May 1972, President Richard Nixon

ordered the mining of Haiphong Harbor to cut off the seaborne flow of supplies to North Vietnam. Four Navy A-7E and three Marine Corps A-6A aircraft laid mines that bottled up 32 ships in the harbor for more than 10 months. The mining operations continued through the rest of 1972, resulting in the laying of more than 8,000 mines in the coastal waters of North Vietnam and 3,000 in rivers and inland waterways.

The only U.S. use of mine-laying since was during Operation Desert Storm in January 1991. According an email from Sean P. Henseler, a professor and deputy dean of the College of Maritime Operational Warfare at the Naval War College and former intelligence officer of one of the two participating squadrons, four A-6E aircraft conducted mine-laying, each armed with 12 500-pound Destructor mines (general-purpose bombs fitted with Snakeye retarding fins and mine fuzes), of the Iraqi port of Umm Qasr. One A-6E was shot down and its two-man crew was killed.

Renewed Interest

The capability for offensive mining has remained intact – though low-key – in subsequent years. But over the last two years, the Navy has shown more interest in offensive mining and has accelerated improvements in its

mining weaponry.

"Mines provide an effective means of achieving sea control and sea denial," a Navy official said in an email provided by Navy spokesman Lt. Cmdr. Kevin Chambers. "Mining creates an additional factor that must be taken into account by our adversaries' decision-making."

According to the Navy official, "munitions requirements are determined based upon COCOM [combatant commander] requirements and input, coupled with fiscal considerations. War-gaming is a useful tool to determine numbers."

Today, naval mines can be deployed from a variety of aerial and subsurface platforms, including attack submarines, Navy F/A-18 strike fighters and P-3 maritime patrol aircraft, and Air Force B-52, B-1 and B-2 bombers.

Until recently, the Navy's mine inventory was limited to the Mk62, 63 and 65 Quickstrike air-delivered mines and the Submarine-Launched Mobile Mine. The Mk62 and Mk63 Quickstrike mines are blast/fragmentation 500-pound Mk82 and 1,000-pound Mk83 bombs, respectively, equipped with influence target-detection devices for use in shallow water. The Mk65 is a thin-walled casing with a 2,000-pound warhead equipped with a target-detection device for magnetic,

seismic and pressure detonation.

For

these air-delivered mines, the Navy ordered new target-detection devices and adapters from Sechan Electronics Inc. during the last quarter of fiscal 2018.

The Navy also has adapted the Joint Direct-Attack Munition (JDAM) guidance kit for the Quickstrike weapons, allowing for more precise seeding of the mines.

This capability was demonstrated in Exercise Valiant Shield in 2018. In

addition, an extended-range version of the JDAM Quickstrike – through installation

of a wing kit – will be tested during the third quarter of fiscal 2019.

One

indication of the growing importance of naval mines is that one of the items on

the Navy's 2020 unfunded priorities list was \$71 million for the Quickstrike JDAM-ER,

which a Navy spokesman said "provides a means to deliver increased capability to the COCOMs."

The Submarine-Launched Mobile Mine is a modified Mk37 torpedo armed with

a target detection device. This shallow-water mine can be covertly launched into

a harbor, anchorage, shipping lane or other area to interdict ship and

submarine traffic.

The

Navy now is developing the Clandestine Delivered Mine (CDM), Capt. Danielle

George, the Navy's mine warfare program manager, said Jan. 17 at the Surface Navy Association convention in Arlington, Virginia. The Navy is conducting testing of the new cylindrical-shaped mine, including end-to-end testing during the second quarter of fiscal 2019. Initial deliveries are scheduled for 2020. George said she was not at liberty to reveal the delivery platform(s) for the CDM.

Another new mine program, started in 2018, is the Hammerhead, an encapsulated torpedo designed to lie in wait for submarines. The capsule for the torpedo would be anchored to the ocean floor, much like the Mk60 CAPTOR mine of Cold War vintage that housed a Mk46 antisubmarine torpedo. (The CAPTOR was withdrawn from the Navy's inventory in 2001.) The Hammerhead will be designed to have modular architecture to allow for technology insertion. The Navy expects to issue a classified request for information for the Hammerhead this year, George said.

"The initial payload for Hammerhead is planned to be the Mk54 torpedo," a Navy official said. "The vision for the program is to use existing technologies, where possible, while seeking opportunities to upgrade and expand the capability as new technology becomes available."

One

thing that has changed offensive mining in recent years is the GPS.

“GPS technology has opened up additional possibilities for increased precision and longer-range delivery,” a Navy official said.

GPS also will aid in the post-war mine clearance, in that “the location of minefields must be carefully recorded to ensure accurate notification and facilitate subsequent removal and/or deactivation,” the official said.

The Navy’s chief of naval operations has a mine warfare plan under development.