



Te Matataua

The Scouting Party of Air Power

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Sea Mines and Air Power

The strategic importance of laying and detecting sea mines during war

Both world wars came to the shores of New Zealand in the form of coastal raiders deploying sea mines in and around our harbours. Two Merchant ships were sunk during WWI; after the war, three people were killed while attempting to drag a mine ashore at Waikoria Beach. On June 13 1940, the German raider *HSK Orion* entered Hauraki Gulf and laid 228 contact mines across the approaches to Auckland. Shortly after, *RMS Niagara* (carrying New Zealand's reserve of small-arms ammunition to help replace British stocks lost in France) departing Auckland for Britain, contacted a mine and was sunk.

A few days after the sinking, a naval officer commented that the mining was an attempt to cut off Britain from overseas supplies - in effect, New Zealand's sea lines of communication had been temporarily cut at Auckland. The ease with which German raiders could harass ships in New Zealand waters and lay sea mines in our harbours provided the impetus to expand RNZAF maritime patrol and attack capability.

Sea mines are both an offensive and defensive weapon and vast 'fields' of mines were 'sown' during the world wars to both hamper and deter enemy movement (see illustration). In 1942 ten mine areas were laid in New Zealand waters as a deterrent to invasion.

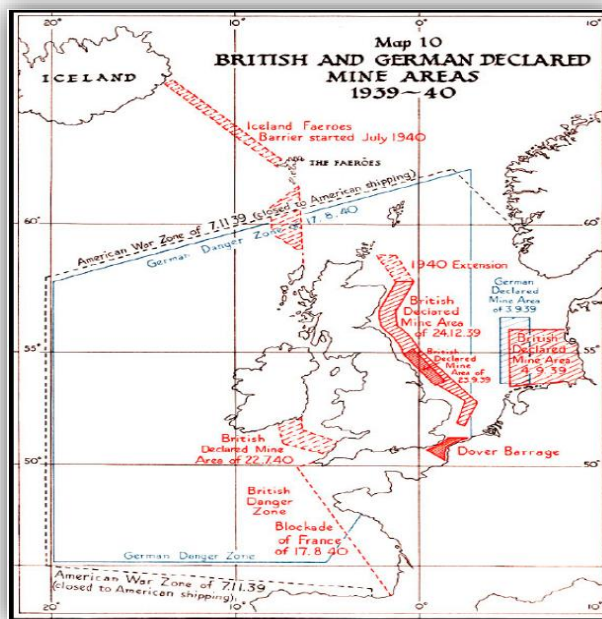
Use of sea mines continued during the Korean War, where more than 3000 mines were laid to frustrate a 250-ship United Nations amphibious task force assault on Wonsan. Three mine countermeasure vessels were sunk during the clearance operation.

Sea mines were also used during the Gulf War, when in February 1991 the U.S. Navy lost command of the northern Gulf to more than 1,300 mines that had been sown by Iraqi forces. Mines severely damaged two Navy warships and commanders aborted an amphibious assault for fear of significant casualties.

Sea mines provide a relatively low cost, 24-hour, all-weather deterrence and interdiction capability that can free navies from

the need to perform blockades. Strategically, sea mine areas shape the battlespace by providing anti-access / area-denial (A2/AD) deterrence, block harbours to stop ingress or egress of ships, and disrupt logistic supply routes of hostile forces. They can be deployed to funnel ships and submarines through a narrow strait, making them more vulnerable to attack.

Sea mines are considered lawful weapons, and are regulated by Hague Convention VIII during war. Military planners need to balance the strategic aims against humanitarian law when laying mine areas, by providing safe alternative routes for commercial



British (red) and German (blue) declared mine areas, 1940

shipping. During peace-time the UN Convention on the Law of the Sea (UNCLOS) provides for the right of innocent passage through the sea, thereby prohibiting the use of armed mines in most waters. Some nations contest this view, as technology allows for certain sea mines to be controlled, sitting unarmed until activated and, therefore, they do not impede sea traffic. Modern microprocessor controlled fuzes can discriminate between vessel classes, allowing some to pass unaffected. Some fuzes can be switched on and off using underwater radio signals, allowing safe passage to friendly ships. The matter remains unresolved to this day.

Approximately a million mines, of more than three hundred types, are in the inventories of more than sixty navies worldwide. These figures imply the need to locate and identify minelaying vessels, which could be warships, or simple fishing vessels rigged to lay mines, or submarines on approach to harbours.

Sea mines can be laid by ships, submarines and aircraft. Military aircraft are well-suited to deploying sea mines into littoral areas as they exploit the air power characteristics of reach and speed. In the opening stages of war, aircraft may be rapidly dispatched to prevent shipping from leaving a belligerent nation's home port; to disrupt their logistic supply routes elsewhere; or to defend home ports from hostile ships and submarines - as New Zealand did during WWII.



Thousands of aerially delivered sea mines were sown in coastal waters during WWII. The Luftwaffe mined the Thames Estuary of England, and later the USAAF dropped nearly 13,000 mines on the approaches to Japanese ports. Japan was heavily reliant on imports to support industry, and the mines severely impacted shipping in its waters. Aerially delivered mines were used to close Haiphong harbour during the Vietnam War, and they were used during Operation Desert Storm when the US Navy dropped 42 mines in the Khawr Az Zubayr River from A-6 aircraft flying from the USS Ranger.

Aerially delivered mines are categorised as 'bottom mines' as they rest on the sea bed. Mines of United States origin are configured using the common, modular, Mk 80 series bomb system. The warhead is fitted with an acoustic, seismic, or influence sensor,

and a high-drag tail for unguided releases. To improve accuracy, aerially delivered mines can be configured with JDAM (Joint Direct Attack Munition) guidance kits and extended range wing kits. For example, the B-52 bomber has undergone flight tests with the 2,000lb *Quickstrike* extended range stand-off mine. The extended range variant can be released over 40 nautical miles from the desired impact point. Proposed powered JDAM technology may see *Quickstrike* mines flying up to 100 nautical miles with GPS accuracy for precision placement in water. Typical United States origin aircraft capable of carrying mines are the: B-52, B-1, F-18, P-3, and the P-8A Poseidon Maritime Patrol Aircraft. Essentially, any aircraft certified to carry Mk 80 series variants of bombs can carry *Quickstrike* mines.

Maritime patrol aircraft play a vital role in detecting minelaying vessels. However, detecting mine areas is just as important in order to protect allied warships, but it is problematic to see mines under the water. Technology is being developed to overcome this issue, allowing detection of individual mines. Trials have also been proposed to determine if JDAM bombs can destroy buoyant mines tethered under the waters surface, thus reducing the risk to Navy clearance divers.

Air power continues to have a significant strategic and tactical role in rapidly deploying offensive and defensive sea mines, and in the detection of mine areas and minelaying vessels during conflict.

Quickstrike extended range mines

Key Points

- In the past, NZ's sea lines of communication have been temporarily cut due to sea mines.
- Mine areas are strategically important in war.
- Air power has a role in establishing mine areas, and detecting enemy minelaying vessels and mine areas.

Further Reading

1. Twenty First Century Aerial Mining, Col M. Pietrucha, Air & Space Power Journal Apr 2015.
2. Sowing the sea with fire: the threat of sea mines, breakingdefence.com, Mar 2015.
3. Rogoway, B-52 tested 2,000lb Quickstrike-ER winged standoff naval mines during Valiant Shield, The War-Zone, 20 Sep 2018.
4. Chatham House, International Law Applicable to Naval Mines, Oct 2014.

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