

Annex E to Chapter 4 – The Mine Threat

1. The Threat

a. Sea mines remain the most likely and dangerous weapon to be used against shipping in every potential conflict. As a weapon, they are relatively cheap and easy to lay by both military and civilian assets (i.e. aircraft, fishing vessels, etc). Nowadays sea mines vary from very simple moored contact mines to mines using high technology to detect and identify potential targets.

b. Sea mines are classified in several ways but can be categorized into three groups.

(1) **Moored Mines.** A mine of positive buoyancy held at a pre-determined depth below the surface by a mooring attached to a sinker on the sea bed. The mine case can be laid to water depths up to 45m while the sinker can be placed in excess of 500m. Moored mines can be triggered by contact or by a magnetic or acoustic influence.

(2) **Bottom Mines.** Bottom mines can be triggered by any influence (acoustic, magnetic, seismic, pressure), or a combination of these influences. These types can be laid up to maximum water depths of 120m, depending on the target and/or the amount of explosive charge, but water depths up to 60m are more suitable.

(3) **Moving Mines.** This is a collective description of mine types which are not stationary. All floating, oscillating, rising or homing mines belong to this category. As an example, rising mines can be laid at a depth of 500m (mine case) and 2400m (anchor).

c. In most cases routes will be designated in an area where mines are suspected and will be subject to mine countermeasure operations by naval units. When selecting these routes the military commander will take many factors into consideration, including suitability of the environment for mine counter measure operations, clear of high tidal streams and currents where possible and to be in range of good visual and/or radar fixing marks for navigation, as well as in range of radar surveillance/coastal defence. Routes will be as short as possible and bends over 20 degrees will be avoided.

2. Self Protective Measures

a. If possible, avoid waters with less than 200m water depth.

b. If possible, sail at high water in order to increase the distance between hull and mine.

c. If possible, take advantage of favourable currents or tidal streams, which will reduce the time spent in the area of danger without the need to increase speed, or alter other ship-made influences. Tidal stream or current will also cause a moored mine to dip, which may result in a ship passing over a moored contact mine.

d. Keep the lowest steering speed, in areas where a mine threat might exist, especially in waters of less than 60m.

e. Ensure that the maximum degree of watertight integrity is maintained below the main deck.

f. Do not throw anything overboard. Many objects that float may be mistaken by lookouts for floating mines.

g. Watch should be kept for any unusual or suspicious activity, such as the releasing of objects into the sea that might indicate mining activity. Aircraft may release mines with or without parachutes.

h. If a mine clearance operation is in progress in a particular area, merchant ships may be guided through the area by naval forces. Before arrival in the area, information on the rendezvous and procedures for such a routing will be provided by NCAGS.

i. Follow directly over the same ground as the ship ahead, avoiding violent manoeuvres that generate noise.

j. Minimize the ship's acoustic signature by securing non-essential machinery and impose a silent routine to keep human and mechanical noise to a minimum. Avoid unnecessary alterations of course, engines reversing, or extreme changes of revolutions that generate noise.

k. Reduce the number of personnel remaining below the main deck, or in compartments below the waterline, to the absolute minimum.

l. Order all personnel to put on safety helmets (hard hats) and life jackets should be worn when on the upper deck.

m. Personnel on the upper deck should stand clear of stays, antennas, and overhanging parts of the superstructure.

n. It is advisable not to anchor in the Mine Threat Area (MTA), but if unavoidable master's should be aware of the change to the ships magnetic and acoustic signatures that this would entail.

o. If a mine is sighted:

(1) Evacuate all personnel from compartments below the main deck and from below the waterline.

(2) Order all personnel to 'brace for shock'. This position can only be held for a limited time and should only be ordered when danger is imminent.