8. INFORMATION CONCERNING SUBMARINES

Source: Ministry of Defence (Navy)

Former Notice 8/04 is cancelled. Alterations and additions to the former notice are shown by sidelines.

PART IA — WARNING SIGNALS

1. Mariners are warned that considerable hazard to life may result from the disregard of the following signals, which denote the presence of submarines:

a. Visual signals

British vessels fly the International Code Group "NE2" to denote that submarines, which may be submerged, are in the vicinity. Vessels are cautioned to steer so as to give a wide berth to any vessel flying this signal. If for any reason it is necessary to approach her a good look out must be kept for submarines whose presence may be indicated only by their periscopes or other masts showing above the water.

b. Pyrotechnics and Smoke Candles

The following signals are used by submerged submarines:

Signal	*Signification*
White smoke candle (with or without flame) (may be accompanied by yellowish green fluorescent dye); Yellow smoke candles; Green flares (Grenades) launched approx. 60-90 metres into the air and burning for about 5 secs.	Indicates position in response to request from vessel or aircraft as required
Red flares (Grenades) (Characteristics as for green flares above)	Submarine carrying out emergency surfacing procedure. Keep clear Do not stop propellers Clear area immediately Stand by to render assistance
Two white or yellow smoke candles released single about 3 minutes apart	Keep clear. I am preparing to surface Do not stop propellers Clear the area immediately

Note: If the red flare (Grenade) signal is sighted and the submarine does not surface within 5 minutes, it should be assumed that the submarine is in distress and has sunk. An immediate attempt should be made to fix the position in which the signal was sighted, after which action in accordance with Part III should be taken.

2. It must not be inferred from the above that submarines exercise only when in company with escorting vessels.

PART IB — SUBMARINE EXERCISE AREAS

3. The notice "Submarine Exercise Area" on certain charts should not be read to mean that submarines do not exercise outside such areas. Warnings that submarines are exercising in specified areas will be broadcast by the appropriate HM Coastguard Rescue Centre. Details of SUBFACTS broadcasts and exercise areas can be found in ALRS Vol. 3.

4. In order to provide early detection of surface contacts by dived submarines it is recommended that vessels operating within Submarine Exercise Areas, as marked on certain charts, operate their echo sounders.

PART II — SURFACED SUBMARINES

5. Submarines may be met on the surface by night, particularly in the following areas and their approaches:

Clyde, North Channel, Minches, Plymouth and Barrow.

Submarines occasionally tow sonar equipment and other vessels are recommended to remain 1500 metres clear when crossing astern of a surfaced submarine.

6. The UK operates a number of nuclear powered submarines of between 4500 and 16000 tonnes displacement. The navigation lights of HM Submarines are mounted on the fin or conning tower and consequently are clustered together and will give a misleading impression of the size and heading of the vessel. The low freeboard and low surface buoyancy of submarines may cause the lights to be obscured for prolonged periods in rough conditions. In addition, the low radar reflectivity of the streamlined shape of a submarine may cause its range to be difficult to assess by radar and thus generate the false impression that the submarine is at a much greater distance than in reality. When at anchor or at a buoy submarines are usually unable to show deck lights and the after anchor light

being mounted on the upper rudder, some distance astern of the hull's surface waterline, may give the impression of two separate vessels of less than 50 metres in length.

7. Submarines (nuclear and non-nuclear) of NATO and other allied nations may also be encountered in UK waters and similar considerations will apply. In summary a submarine when surfaced by night or day will be difficult to assess for size and aspect. In particular their vulnerability to collision when proceeding on the surface and the fact that many are nuclear powered dictates particular caution when approaching them. All submarines are fitted with a flashing light to indicate to an approaching vessel the need for caution. The characteristics of this additional light vary from country to country but are typically yellow, orange or amber (Denmark is unique in fitting a blue light) flashing at 70 - 180 flashes per minute or flashing (3) at a short interval. Care should be taken not to confuse this light with that shown by a hovercraft which flashes at 120 per minute. Denmark will withdraw its submarines from service in early 2005. However, they may be encountered enroute to disposal or sale.

8. When submerged submarines operate at a depth either calculated to be deep enough to enable them to pass safely underneath any vessel likely to be encountered or near the surface with masts and periscopes raised to allow observation of the surface. In the latter mode the submarine will show no lights by night and in all conditions will assume that it has not been detected by any vessel that it may encounter. Therefore it will not follow the Rule of the Road and will independently adjust its course, speed or depth to avoid collision. Submarine periscopes and masts are designed to be difficult to detect by radar or visual means, hence a careful lookout is necessary when believed to be in the vicinity of a submarine that is dived.

PART III — SUNKEN SUBMARINE

9. A bottomed submarine which is unable to surface will try to indicate her position by the following methods:

a. Releasing an indicator buoy (which carries a vertical whip aerial) as soon as the accident occurs (see Fig. 1 and part IV).

b. On the approach of surface vessels and at regular intervals by firing candles giving off a white flame and white smoke or just yellow smoke.

Note 1: A partially flooded submarine may have only a certain number of her smoke candles available and searching vessels should not therefore expect many to appear. It some circumstances, it may be impossible for a submarine to fire any smoke candles.

Note 2: Some submarine pyrotechnics can be fitted with message carriers. If a message has been attached, the pyrotechnic will be fitted with a dye marker, discharging a yellowish green dye into the water on reaching the surface. Such a pyrotechnic should be recovered as soon as it has finished burning.

c. Pumping out oil fuel or lubricating oil.

d. Blowing out air.

Note 3: Since oil slicks or debris may be the only indication of the presence or whereabouts of the sunken submarine, it is vitally important that surface vessels refrain from discharging anything that might appear to have come from a submarine while they are in the submarine probability area. Searching vessels and aircraft can waste many valuable hours investigating these false contacts.

10. British and some Allied submarines are fitted with two indicator buoys, one each end of the vessel, which can be released from inside in case of emergency or if for any reason the submarine is unable to surface. A description of the indicator buoys is given in Part IV.

11. In any submarine accident, time is the most vital factor affecting the chances of rescue of survivors, and as the sighting of an indicator buoy may be the first intimation that an accident has in fact occurred, it is vital that no time should be lost in taking action.

12. The sighting of any buoy answering the attached description should at once be reported by the quickest available means to the Navy, coastguard, or police. However, if vessels are unable to establish communications without leaving the vicinity of the submarine, it should be borne in mind that the primary consideration should be for vessels to remain standing by to recover survivors and not leave the scene of the accident. Every effort should be made to include in the report the serial number of the buoy; this number is affixed below the word "Forward" or "Aft", as shown in the attached plates.

13. Indicator buoys are attached to the submarine by a 1000 metre length of braid line. Buoys found in areas where the depth of water is less than 1000 metres may be secured to a sunken submarine. In areas where strong tidal streams or currents are prevalent the depth from which the buoy may be expected to watch is considerably reduced and in these areas it is possible that a buoy may only watch at slack tide. It is possible that indicator buoys may break adrift accidentally even though the parent submarine may not have sunk; similarly, a buoy found to be adrift is not necessarily an indication that all is well since it may have broken adrift after being deliberately released following an accident. In any case it is therefore important to establish whether or not the buoy is adrift and it is considered that the only practical means of determining movement is by observing its behaviour in a tidal stream or seaway, or periodically fixing its position. In any event it is absolutely vital that the mooring wire is not parted nor any tension applied to it. Boats should not secure to it.

14. The preferred method of saving the lives of personnel in a sunken submarine is by rescue. This involves the use of specialised submersibles and support craft, and it is likely to take a considerable period of time before they can all arrive at the scene of the accident. The first assisting personnel on the scene are likely to be parachuted in with their own inflatable boats. Once a rescue

operation gets underway it is vital that vessels not involved keep well clear. Most submarines are now fitted to receive rescue vehicles, but for those that are not escape is the only option.

15. At any time between the accident and the arrival of assisting or rescue forces, conditions in the bottomed submarine may deteriorate to the point where the crew have to escape. The precise time at which an escape may be conducted will not be known in the early stages of any operation, and thus it is important that any vessel finding an indicator buoy should stand by ready to receive escapees until relieved by Naval forces.

16. In order that those trapped in the submarine know that help is at hand, Naval vessels drop patterns of very small explosive charges, the meanings of which are known to the submarine. Rather than do this, other vessels can indicate their presence by the intermittent running of an echo sounder on high power, or by banging on the outer skin of an underwater portion of the vessel's hull with a hammer. Such sounds are likely to be heard by the submarine and should be carried out at frequent intervals. The submarine may if possible acknowledge this by releasing a flare that gives off a flame or smoke once reaching the surface. Once Naval forces arrive, such noisemaking should be stopped so as not to interfere with other underwater communications.

17. If the escape option is started, escapees will ascend nearly vertically from the bottomed submarine, individually or in small groups. On arrival on the surface they may be exhausted or ill, and the presence of an already lowered boat to assist in their recovery is very desirable. Some men may require recompression treatment, and Naval authorities will aim to get such recompression chambers to the scene as soon as possible.

18. Naval authorities are always ready to put an escape and rescue operation into effect, but it remains clear that any vessel finding evidence of a submarine disaster may be in a unique position to assist with lifesaving by taking prompt action as described above.

PART IV — DESCRIPTION OF SUBMARINE INDICATOR BUOYS

19. Type 0070 Buoy (see Fig. 1). The buoy is made of expanded plastic foam covered with a 3 mm thick GRP skin for physical protection. It is semi spherical in shape, 76 cm in diameter and 90 cm deep. Anchorage for the 5 mm braided nylon rope mooring at the bottom of the buoy is slightly offset from the centre. The buoy floats end up with a freeboard of about 15 cm in slack water. It is covered with longitudinal strips of reflective tape alternately red and white as shown in the figure. For identification purposes each buoy is allocated a three digit serial number (e.g. 043) which is displayed on each side under the words "Forward" or "Aft". Also inscribed around the top of the buoy are the words: FINDER INFORM NAVY, COASTGUARD OR POLICE. DO NOT SECURE TO OR TOUCH. A programme is in place to change the colour scheme of these indicator buoys to a uniform international orange. The other wording will remain the same. It is possible that either type may be encountered.

A light which flashes approximately every 2 seconds, over a period of about 72 hours, is mounted in the centre of the top surface. In darkness and during good weather, the unassisted visibility of the light is 5 nautical miles.

The Radio Transmitter Unit

The buoy carries UHF whip aerials (200 cm and 100 cm long respectively) and is fitted with two automatic transmitting radio units which operate on 406·0 MHz and 243·0 MHz. The transmitter is automatically activated when the indicator buoy is released and the transmission sequences is as follows:

The UHF 243·0 MHz SARBE emission will consist of 3 audio sweeps from 1600 Hz down to not lower than 300 Hz, occupying a period of 1·2s. The emission will then be silent for 0·8s. The transmission duration should continue for a minimum of 72 hours. The 406·0 MHz UHF emission will consist of a SARSAT transmission.

PART V — DESCRIPTION OF PYROTECHNIC STORES AND SONOBUOYS

20. The accompanying Figures 2 to 5 show smoke candles fired from submarines, sonobuoys, aircraft smoke and flame flares and marine markers.

a. White Smoke Candles (see Fig. 2). These are fired from submarines to indicate their position. They burn for up to 10 minutes emitting white smoke and flame and can thus be seen by day or night; they can easily be confused with aircraft marine markers and floats, smoke and flame. The candle can also give off a yellowish green dye indicating that a message carrier is attached at its top end.

b. Yellow Smoke Candles (see Fig. 2). These are fired from submarines to indicate their position. They burn for about 5 minutes emitting yellow smoke. They can be seen more easily than the white smoke candles in rough weather but cannot be seen at night.

c. Sonobuoys (see Fig. 3). These are dropped from aircraft to detect submarines and may be encountered anywhere at sea.

d. Smoke and Flame Flares and Marine Markers (see Figs. 4 & 5). These are dropped from aircraft to aid in search operations. They burn for varying durations as shown in the figures. Other versions are in service and may be encountered.

21. The above may frequently be met within areas where HM vessels and aircraft exercise, whether or not submarines are present, and should not be confused with submarine indicator buoys. In case of doubt the object should be approached to confirm, visually, whether or not it is a submarine indicator buoy before reporting it.

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Fig 2
SMOKE CANDLES FIRED FROM BRITISH SUBMARINES

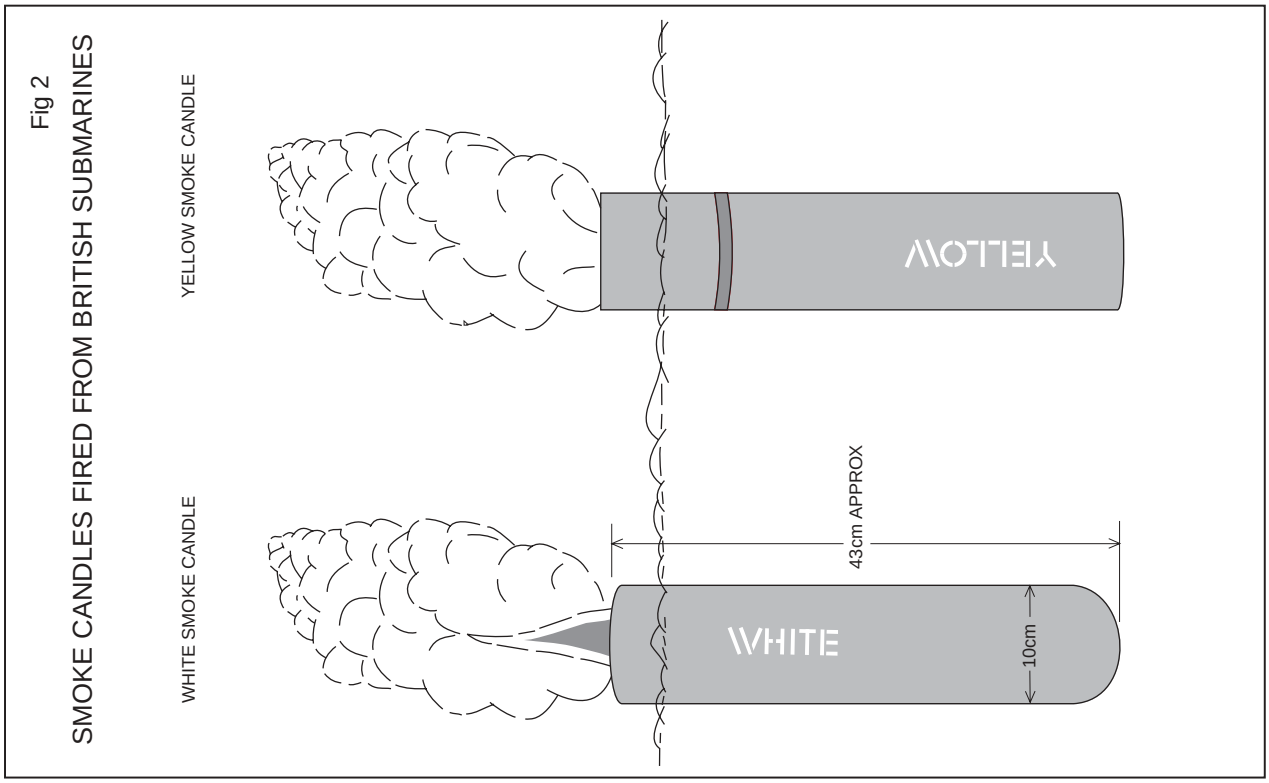


Fig 1
TYPE 0070
SUBMARINE INDICATOR BUOY

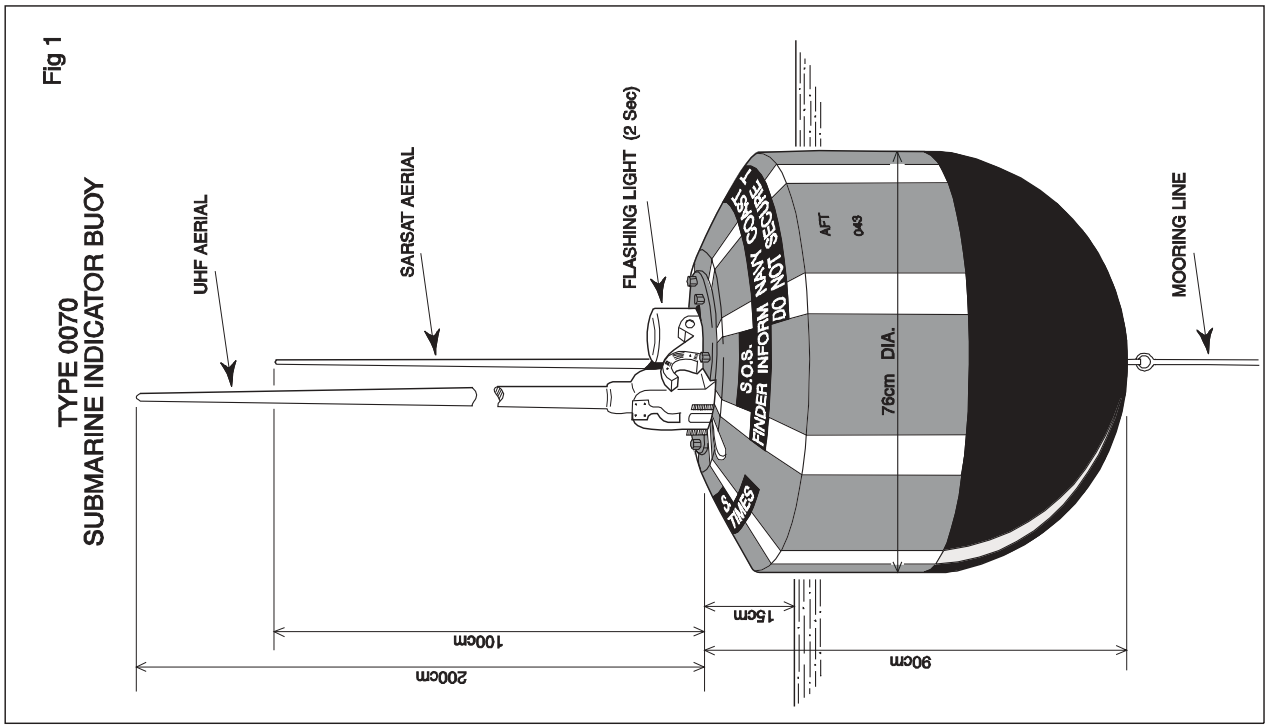


Fig 3

TYPICAL DEPLOYED SONOBUOY

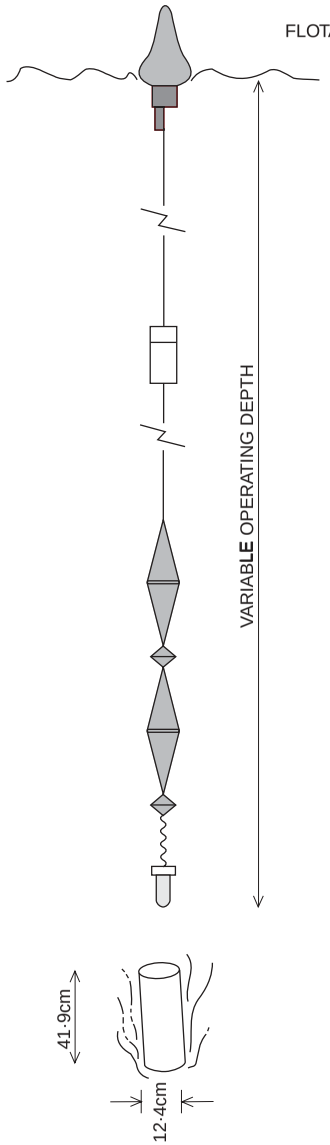
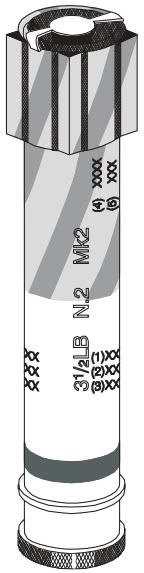


Fig 4

SMOKE AND FLAME FLARE N.2 Mk2



LENGTH	38cm	WEIGHT FILLED	1.4kg
DIAMETER	8.3cm	WEIGHT OF FILLING	400g
DIAMETER OVER TAIL FINS	9.9cm	DURATION OF BURNING	6min
		COLOUR OF SMOKE	WHITE

MARKINGS:
(1) DANGER
(2) DO NOT TOUCH
(3) INFORM POLICE
(4) MONOGRAM OF FILLING STATION AND MONTH/YEAR OF FILLING
(5) LOT NUMBER

MARKER MARINE No 4 Mk 7

LENGTH	91.4cm
DIAMETER	10.4 cm
DURATION OF BURNING	50 to 60 mins
COLOUR OF SMOKE/FLAME	WHITE/YELLOW

MARKINGS:
(1) FILLED LOT NUMBER
(2) FILLER
(3) NATURE OF FILLING
(4) DATE OF FILLING
(5) MANUFACTURERS INITIALS
(6) YEAR OF MANUFACTURE
(7) DATE OF PURGING
(8) PURGING CONTRACTORS INITIALS

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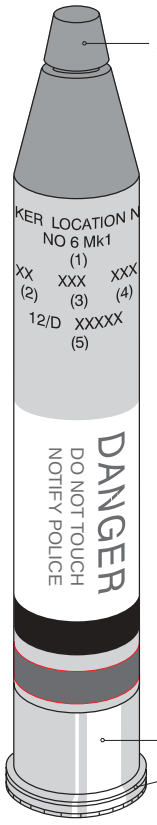
Fig 5

MARKER, LOCATION, MARINE NO 6 Mk 1



LENGTH	45cm	WEIGHT FILLED	1.5kg
DIAMETER	7·4cm	WEIGHT OF FILLING	227g
		DURATION OF BURNING	10-12 mins
		EMISSION	FLAME AND WHITE SMOKE

MARKINGS IN WHITE

(1) NAME, NUMBER AND MARK
(2) LOT NUMBER
(3) MONOGRAM OF FILLING STATION
(4) DATE OF FILLING (MONTH/YEAR)
(5) REFERENCE NUMBER

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