canvas and chewing gum. X.7 also suffered some inconveniences due to small boats and minor war vessels.

22nd September Phase I

X.7 left the lee of the Brattholm group of islands at 0045 to commence the penetration of the known and unknown defences of Kaafiord, followed an hour later by X.6; neither boat having made friendly contact during the night. Operationally such contact was not necessary and it had not been allowed for in the plan.

At 0340, X.7, first in the field, straightened up for the entrance through the A/S boom defence gap at the entrance to Kaafiord and by 0400 was through, only to be put deep by an M.L. outward bound. As a result of this temporary blindness X.7 got caught in the unoccupied square of A/T nets, once used to house LUTZOW but now empty. X.6 following later, and having increasing trouble with her periscope, dodged a small ferry boat and an A/S patrol vessel and at 0505 also passed through the A/S boom gap.

Meanwhile, life in Kaafiord in general and TIRPITZ in particular pursued its normal course. Hands were called, normal A/A defence and anti-sabotage watch ashore and afloat were set, the boat-gate in the A/T nets was opened for boat and tug traffic, and the hydrophone listening office ceased work, all at 0500.

Phase II

X.6, suffering from a flooded periscope, went to 60 feet to strip and clean it, while proceeding by D.R.* towards the western end of the fiord. On coming to periscope depth again she found she was so close to NORDMARK that she had to alter course to avoid the mooring buoy. To add to her difficulties, the periscope again clouded over and the periscope hoisting motor brake burnt out resulting in manual control of the brake being necessary when raising or lowering the periscope.

By 0705 X.6 had closed the A/T shore met defence of TIRPITZ and was through the boat entrance, and within striking distance of the target.

X.7 having got caught in the unoccupied A/T defences in the middle of the fiord spent a busy, if cautious, hour in getting clear at the expense of breaking surface, unseen, and putting the trim pump out of action. The violent action required to break free of the nets also put the gyro compass off the board. By o600, having had another incident with a wire across the periscope standard, X.7 was clear, though precariously trimmed at periscope depth, and headed for the target.

At 0710, having decided in favour of passing under the TIRPITZ A/T net defences, X.7 endeavoured to do so at 75 feet and get caught.

Up to this point no suspicions had been aroused in TIRPITZ and normal harbour routine was in progress.

Phase III

After passing through the gate X.6 ranaground on the north shore of the enclosure and broke surface. This was observed in TIR-PITZ but, although reported as a "long black

* DR —dead reckoning of navigational position.

submarine-like object "there was a five minute delay passing the information on to higher authority as it was thought that the object sighted might be a porpoise.

Five minutes later, X.6 in backing and filling to get clear of the ground and to get pointed in the right direction to close TIRPITZ, again broke surface about 80 yards abeam of TIRPITZ and was sighted and correctly identified.

X.6 by this time had no gyro compass, as this had been put out of action by the grounding and subsequent violent angles on the boat, and the periscope was almost completely flooded. She was therefore taken blindly in what was imagined to be the target's direction, hoping to fix her position by the shadow of the battle-ship.

After five minutes X.6 got caught in an obstruction which she took to be the A/T net on the far (starboard) side of TIRPITZ but which was probably something hanging down either from TIRPITZ or one of the craft along-side. Lieutenant Cameron straightened his craft up, manoeuvred clear of the obstruction, and surfaced close on the port bow of TIRPITZ when a brisk fire from small arms and hand grenades was opened on the submarine. The submarine was too close to the ship for any of the heavy A/A or main armament to bear.

Realising that escape was hopeless, Cameron destroyed the most secret equipment, backed his craft down until the stern was scraping TIR-PITZ hull abreast "B" turret, released his charges and scuttled the craft. X.6 started to sink as a power boat from TIRPITZ came alongside, picked off the crew of four and vainly attempted to take X.6 in tow, but X.6 followed her explosives to the bottom.

On board TIRPITZ and in Kaafiord the alarm had now been properly raised, and it is clear from the entries in the battleship's log that complete surprise had been achieved by our forces.

Although the first sighting had been made at about 0707 (a note in the log states that times between 0705 and 0730 are inaccurate) it was not until 0720 that the order was given to close watertight doors, and the A/A guns' crews closed up. A power boat "manned by one officer and equipped with hand grenades" left the ship at about 0715, and was the one which took off the crew of X.6, having used her hand grenades, happily to no effect.

"Action stations" was sounded, steam raised and the ship was prepared for sea, in order to get her outside the nets. This order was apparently not given until 0736, when watertight doors were reported closed. Divers were ordered to go down to examine the hull for limpet mines* but it appears that some form of charge dropped under the ship was also expected, as the extract from the log recording the preparations for sea reads "in order to leave the net enclosure if possible before the time-fuzed mines detonate".

Destroyers in the fiord had also raised steam, and were requesting depth charges.

While TIRPITZ was making up her mind how, to deal with the situation, X.7, so far unseent but stuck in the nets ahead of TIRPITZ,

Admiralty footnote -

* Limpet mines—explosives attached to the ship's side or bottom.