

H.M.S. "AMETHYST"

IN THE YANGTZE—ENGINEERING EXPLOITS

by

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This is the story of *Amethyst's* ordeal in the Yangtze, written from the point of view of the Engine Room Department. It begins 0930 on April 20th, when the ship was hit in the wheelhouse and bridge and ran aground, and ends on the night of July 30th when her Commanding Officer made his "Now or never" decision to run the gauntlet.

CASUALTIES AND DAMAGE

Personnel

The C.P.O. Stoker Mechanic and five Stoker Mechanics (S.Ms.) were killed. The Engineer Officer, C.E.R.A., and four S.Ms. were wounded.

One E.R.A. and four S.Ms. swam ashore and made their way to Shanghai.

The Engine Room Department was reduced in this way to two E.R.As., one Mechanician, five P.O.S.Ms., three L.S.Ms. and seven S.Ms. Later, an E.M.1 and a boy were recruited into the Department and did very well.

Machinery

Damage was surprisingly small. A shell burst on the waterline at the stern and flooded the Tiller Flat, but the steering gear (two-ram type, operated by a V.S.G. pump and reciprocating engine) continued to work with water-contaminated oil in the engine sump.

The starboard engine telegraph transmitter handle was found to be turned past the stop, in a position halfway between "Full Ahead" and "Full Astern". This was remedied by cutting off the stop.

The starboard T.G. Room was hit but the generator, which was on load, escaped damage. A hole in a bathroom scupper pipe which passes through



BRIDGE STRUCTURE

the Turbo-Generator Room and a broken salt water service pipe in the bathroom started a flood in the T.G. Room, which was stopped by isolating the salt water service.

The air lock of No. 2 Boiler Room was pierced by splinters, but the holes were not large enough to cause any appreciable loss of air pressure.

The Engine Room port supply fan trunk and impeller casing were hit by a shell and splinters but the fan revolved, when emergency leads had been rigged, discharging a shower of scale.

The fresh water system was hit in several places, most important being the gravity tank pipe behind the bridge. The gap in this pipe was later bridged by rubber piping. Less important pipes were isolated or plugged.

The firemain itself suffered no damage but sanitary services and salt water supplies to bathrooms were hit. The damaged parts were isolated.

The main suction line remained intact, as did the "Snorer" pump, the two-man manual pump and a portable semi-rotary pump. Some of the "Snorer" pump and three-inch leather suction hoses were perforated, however, as was the after 20-ton hull and fire pump discharge overboard pipe.

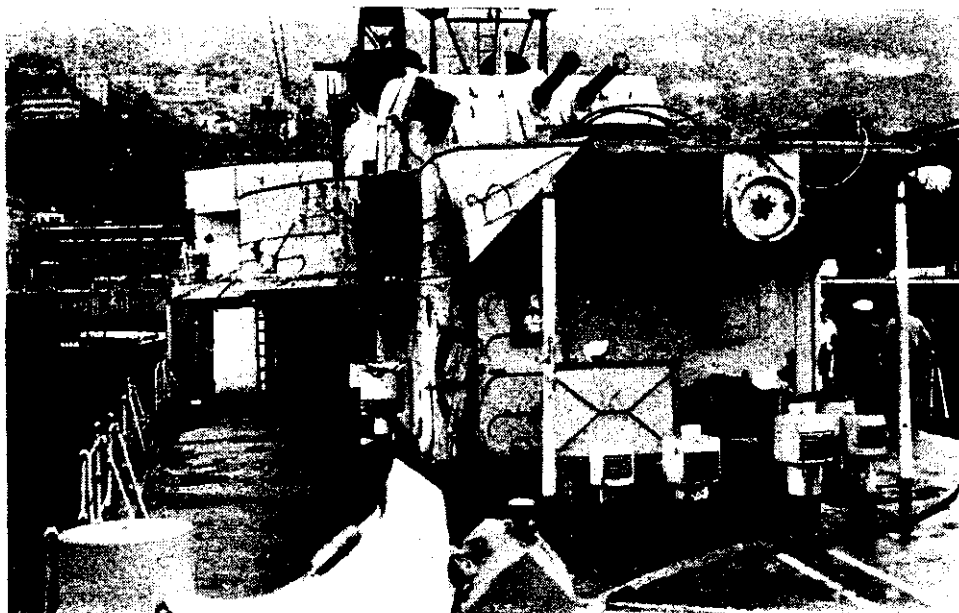
The furnace fuel oil filling line was undamaged but, on the diesel fuel filling line, the deck filling pipe and strainer were shot away.

No steam pipes were hit. Orders were received to shut down boilers after grounding while the shelling was still going on, to reduce danger to personnel.

Subsequent flooding aft caused some external corrosion of the steel telemotor leads, but they lasted out.

Structural

Only one shell caused real structural damage inside the ship. This burst in the lobby between the Depth Charge Lockers and the Wardroom Store, distorting three bulkheads and blowing off the hatch above.



QUARTERDECK—HITS ON X GUN AND DEPTH CHARGE STORE

Most of the shells appeared to burst on impact, causing large holes in the ship's side, but confining internal damage to that caused by splinters.

The most troublesome holes were those on the waterline in the Tiller Flat and in the Wardroom. Persistent flooding from these eventually made the After Flat uninhabitable and it was shut down.

Fuel

The ship had 365 tons of furnace fuel and 14 tons of diesel fuel on board when damaged, capacity being 391 and 28.6 tons respectively. The top of No. 7 Oil Fuel Tank was pierced by splinters, but this was of little consequence. The holes were covered temporarily by a mat and later plugged with wood and white lead. About 5 tons of fuel were pumped overboard on the night of April 20th, as one of the measures to lighten the ship to enable her to be refloated.

Main Engines

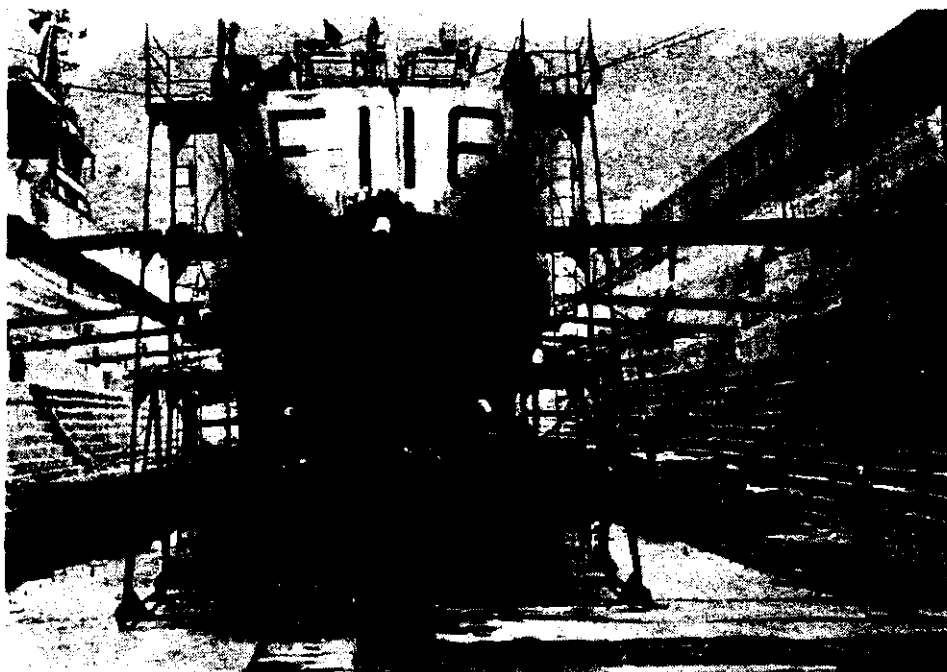
The engines ran full astern (180 r.p.m.) almost continuously for $1\frac{1}{4}$ hours on the night of April 20th, in the successful effort to refloat the ship. No trouble was experienced then or subsequently.

Generators

The ship is fitted with two 100 k.w. turbo-generators and one 70 k.w. diesel. Unfortunately, the diesel had been a continuous source of trouble in the past and it had been stripped down for more than a year when the ship was hit. A good diesel generator would have been of great value during the subsequent period. The turbo-generators behaved well.

REPAIRING THE DAMAGE

Lieutenant Commander J. S. Kerans assumed command of the ship on April 22nd. The wounded had been evacuated the previous night. The dead were buried and the work of clearing up the ship commenced.



“ AMETHYST ” IN DOCK AT HONG KONG, SHOWING HOLE IN STERN TO TILLER FLAT

Damage Control

This was organized by Lieut. (now Lt. Cdr.) (L) G. B. Strain, the Flotilla Electrical Officer, under the general direction of the Captain.

Some excellent shoring was done with improvised materials, such as hammocks, mattresses, and even socks. A stock of very hard wood which had been “ won ” in Malaya provided not only strong shores but also good exercise for personnel in cutting them.

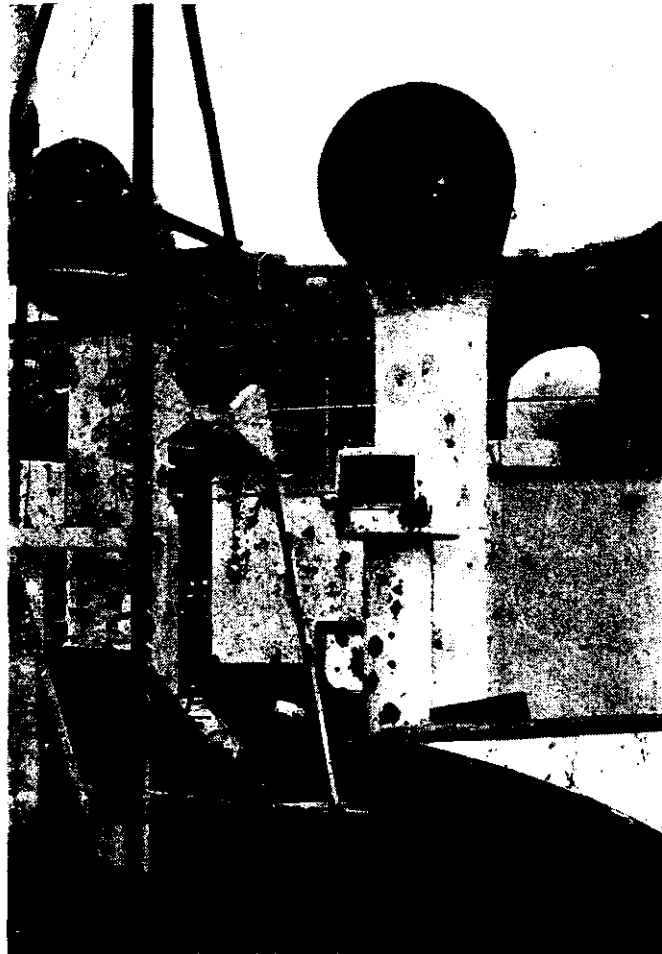
The small supply of cement in the ship was unserviceable with age but white lead was used as a substitute for plugging seams, etc.

The collision bulkhead, penetrated by shellfire, was shored, with the possibility of a collision in an eventual break-out in mind.

In general, the larger holes in the ship's sides were plugged with hammocks, forced in by shores. Smaller holes were sealed with splinter boxes (the best way of securing these was found to be by a bolt through the centre). Wooden plugs were driven into the smallest holes. The work entailed much tearing away of lagging and fitted furniture.

The hole in the stern was never successfully plugged. It was a lap joint of $\frac{1}{2}$ -inch plates, curved in two planes ; the hit had opened up the joint and buckled the bottom plate. The water in the Tiller Flat could be controlled by continuous pumping but this became impracticable later.

For stability reasons, when the fuel remaining had been considerably reduced, it was decided to flood Nos 7 and 8 O.F. Tanks, “ X ” Magazine (“ X ” gun having been knocked out in the action) and the For'd Ballast Compartment. This was done on July 1st. Water leaked out of “ X ” Magazine through the propeller shaft glands and these had to be repacked. Immediately before the



ENGINE ROOM EXHAUST VENTILATORS

break-out it was decided to flood Nos 1 and 2 O.F. Tanks also. This was done by branch-pipes down the sounding tubes.

Splinter protection, in the form of hammocks, cushions and bedding, was rigged around the Bridge structure, especially the W.T. Office, and on both sides of the After Messdeck. Flour in bags was also used as splinter protection on the Bridge and around the W.T. Office, starboard side.

The marking of the bulkheads and compartments, the stowage of Damage Control equipment, the stowage of the Tiller Flat and the lack of information in the Ship's Book were adversely commented on by the Captain. Nobody knew how to mix cement properly. (All A.F.O.s had been destroyed.) The fire-fighting equipment and the condition of the pumps were praised.

Machinery

The E.R.As. and Mechanician got through a lot of work, including bridging and blanking damaged pipes, fitting new steam valves to steering engine and fire and bilge pump, refitting the For'd 20-ton pump, distiller pump, two-man manual pump, both main circulators and both boiler room fans, reseating valves, repacking glands, remaking joints, repacking propeller shaft bulkhead



HITS IN CH. & P.Os.' BATHROOM (TOP) AND STARBOARD
TURBO-GENERATOR ROOM (BOTTOM)

glands, servicing the main refrigerator and D.A.Rs. and fitting new base plates to rat traps.

The Senior E.R.A. (L. W. Williams) kept the Workbook and Rough and Fair Registers going and even submitted the quarterly Fly Sheet and the I.C.E. Report.

Lieut.-Cdr. (L) Strain, who was in charge of the Department, afterwards remarked upon the superb training of the Engine Room ratings.

The F.E.O. at Hong Kong (Capt. (E) F. V. Stopford, R.N.), after inspecting the Engine Room Department on the ship's return, said that it was just as if it had been prepared for a C.-in-C.'s inspection.

The maximum temperatures recorded in the Engine Room and Boiler Rooms were 120 and 130 degrees respectively, towards the end of July.

The Captain, with an eye to the S.Ms.' health, found jobs for them on the upper deck ; the capstan engine, boiler room fan intake flaps, oil fuel tank air escape pipes and syrens received some unprecedentedly vigorous attention.

Boiler brickwork deteriorated and the supply of spare bricks ran out.

FUEL PROBLEMS

Fuel was the key to the situation and on it depended the very existence of the whole ship.

Auxiliary steam was kept up from April 20th to May 21st. By the latter date, fuel remaining was 179.2 tons, furnace and diesel. Fuel expended had averaged 6.6 tons a day.

It was then decided to raise auxiliary steam for only about 12 hours daily, to make water, pump out compartments, for ventilation and communications

and to run the refrigerator. This was done until June 15th, by which date fuel was down to 106 tons all told. Expenditure during this period had averaged less than 3 tons a day.

Now began a period, from June 15th to July 10th, when steam was raised every other day and sometimes every third day. By July 10th, 62.7 tons of furnace fuel and 9.8 tons of diesel fuel remained. For this period consumption had been about 1 ton a day. This, in mid-summer in the Yangtze, was a most trying time.

On July 10th, after considerable negotiation, 54 tons of furnace fuel was received from Nanking. It was this fuel which was eventually to enable *Amethyst* to escape; one can imagine how her invigilators feel about that now. It came by junk, towed by an inefficient tug; the junk grounded on the river bank once and there was much excited discussion there before it was allowed to try to get alongside *Amethyst* again. Two hundred and ninety-four drums of fuel were stuck down below into the tanks in eleven hours, from 0500 to 1600. Each drum had to be hoisted inboard and rolled to its filling position. All three positions were utilized, a semi-rotary pump and hoses being rigged on the for'd one, and wooden cradles with ramps and funnels on the other two positions. All available hands took part, in two watches.

Once again the steam was raised daily for about 12 hours until July 24th, when a typhoon warning was received. The second anchor was dropped and main steam raised and the Captain prepared to run for it if the anchors dragged or cable parted. However, the ship rode it out.

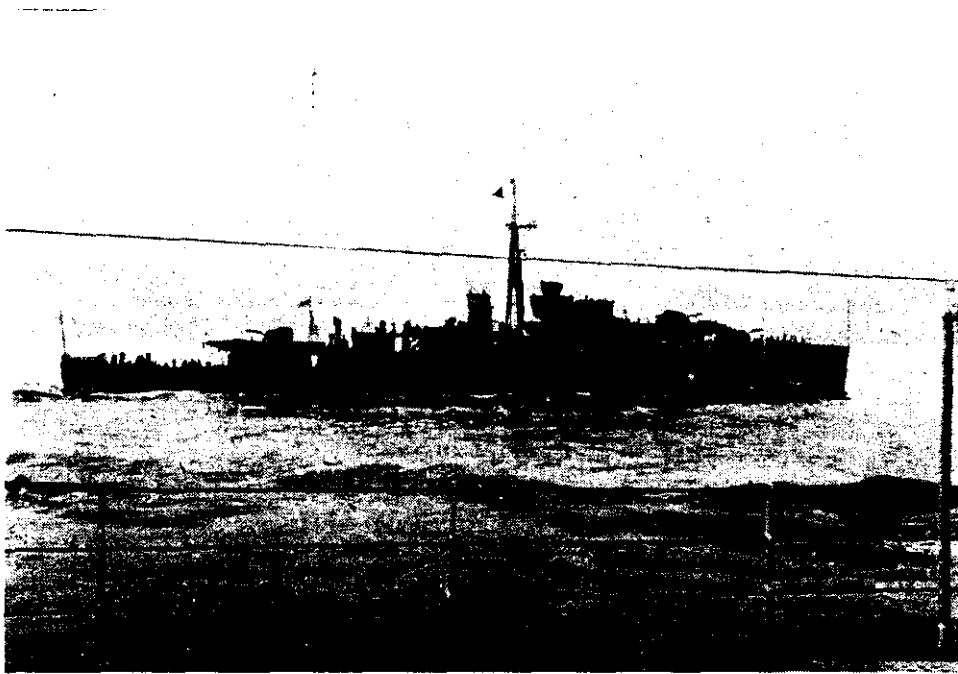
The Captain kept a blackboard in his cabin, on which was chalked daily the quantities of important stores and fuel remaining. On the night of July 30th, negotiations having bogged down, the Captain decided to attempt the break-out, the fuel then remaining being 47.3 tons. After running the gauntlet at full power for 149 miles, fuel remaining when *Concord* was met off Woosung was 23.2 tons. It was a thirsty ship which received 147 tons of fuel from *Concord* on July 31st, the loss of suction for Nos. 3 and 4 O.F. tanks, in which the 23.2 tons were stowed, being estimated to occur at 16-18 tons.

LIVING CONDITIONS

The Officers' and Ship's Company's Heads and Bathrooms were put out of action by damage. Only the Captain's and C. and P.Os.' Heads and Bathrooms were useable. Fresh water and sanitary water had to be pumped by hand in the "shut-down" periods. Manual pumps were rigged for sanitation. The hand fresh water pump was already fitted, but ingenious use was made of the gravity tank float control wiring to the electric pump starter to work a battery-operated indicator down on the hand pump to show when the gravity tank was full.

All meals were prepared in the Ship's Company Galley, the Officers using the Captain's cabin as a mess and the Ship's Company using the After Mess-deck. Potatoes, bought from the local inhabitants, were 1s. 3d. a pound. Some beer, obtained from Shanghai towards the end, was priced at 12s. 6d. a bottle.

Vermin, in the form of rats, cockroaches and mosquitoes, were troublesome. A stock of rat traps, insecticide and mosquito netting eventually reached the ship from Shanghai, but "Simon" the cat was the only successful rat-trap.



H.M.S. "AMETHYST"—EN ROUTE YANGTSE TO HONG KONG

Lectures, on "Machinery", "Pumping and Flooding", "Firefighting" and "Diving" were given by the senior Engine Room ratings to the junior ones.

An attempt was made to rig a windsail to the Engine Room, but it was not a great success. Decks and ship's side were cooled by water through a perforated canvas hose laid along the deck. Canvas sidescreens were rigged in way of Engine Room and Boiler Rooms.

Normal maintenance work took place frequently on the forecastle, in order to get the Communists accustomed to the sight of bodies of men in this area. Hammock bedding and canvas was packed around the cable to deaden the sound of its movement when slipping.

Factors which made it necessary to raise steam were the need to run the refrigerators and the failure of the last valve of the battery-operated W/T set. Ventilation below decks, in store rooms, was also a factor.

On two occasions the absence of lights on the upper deck almost caused the ship to be rammed by passing steamers at night.

HOME STRETCH

Steam was ordered for 2200 on July 30th. "Obey telegraphs" was ordered at 2207 and the first movement was at 2209.

The ship was hit once during the break-out—in the Naval Store. The store was flooded, but the loss of what few stores were left at this time was not a major disaster. The shell-hole was plugged.

The trip down to Hong Kong put paid to the remaining boiler brickwork.

The long running of the evaporator in the river had been very hard on its brine pump. The ebonite plunger rings had completely vanished.

The funnel and atmospheric exhaust pipe had been pierced and required patching.

The list of defects finally rendered to the Chief Engineer at Hong Kong, the minimum required to make the ship seaworthy for the passage to U.K., contained 21 items, including defects caused by action damage. This, with the ship three months overdue for annual refit, is sufficient testimony to the good work put in by the survivors of the Engine Room Department.

Tribute should also be paid to all departments of H.M. Dockyard, Hong Kong, for their great effort in preparing the ship for sea in one month, and to the builders of *Amethyst*, Messrs. Alex. Stephen, of Glasgow. It is of interest, too, that *Amethyst's* sister-ship, *Hart*, was built on the next-door slip at the same yard in 1943.