FIG. 1

REPAIR TO A MAIN CIRCULATOR INLET PIPE

H.M.S. ULSTER

During H.M.S. *Ulster's* annual full power trial in December, 1962, the starboard main circulator sea inlet tube developed some small perforations in and around the welding of the flange on the sea side of and adjacent to the inlet valve box.

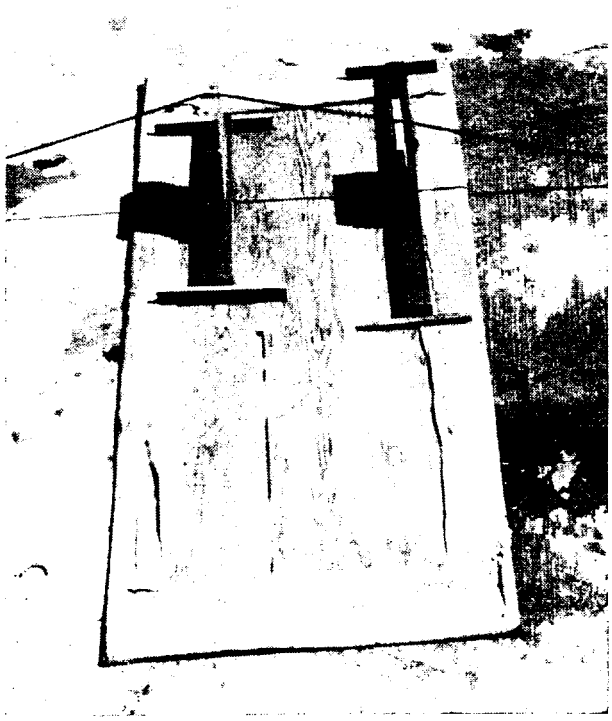

FIG. 2

Over a period of 48 hours, these perforations developed into very serious holes, of approximately $\frac{3}{4}$-inch diameter, and spread round one quarter of the circumference of the tube. The metal in the vicinity was of negligible thickness and could be seen disintegrating. Wooden wedges, rubber sheeting, etc., secured with a series of Spanish windlasses, checked the flow very considerably, as can be seen in FIG. 1, until a temporary repair could be effected.

The inlet grating was sealed from the sea by divers with a large plywood cover, surfaced

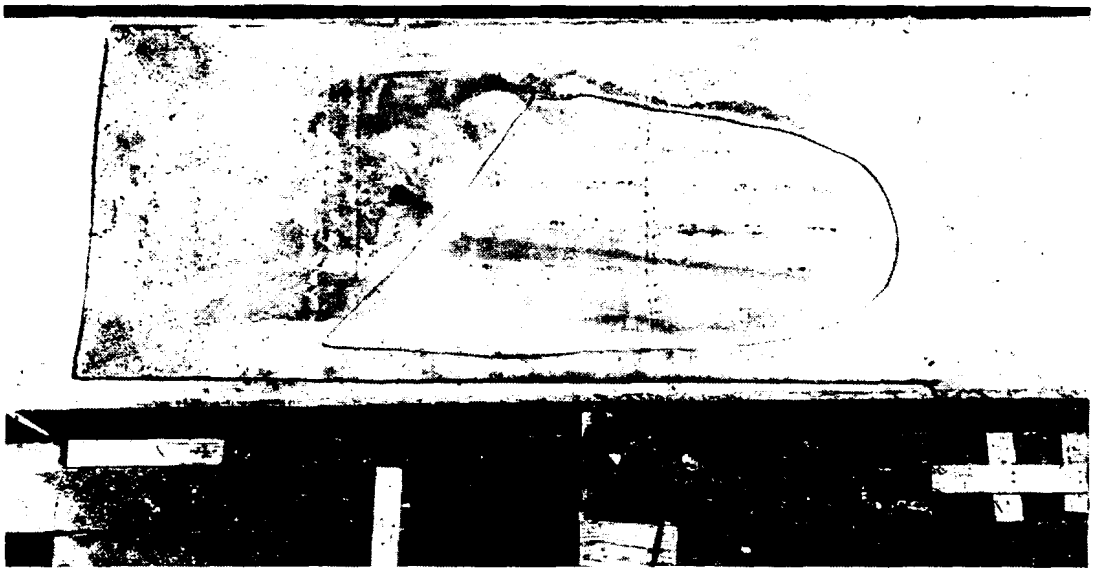

FIG. 3

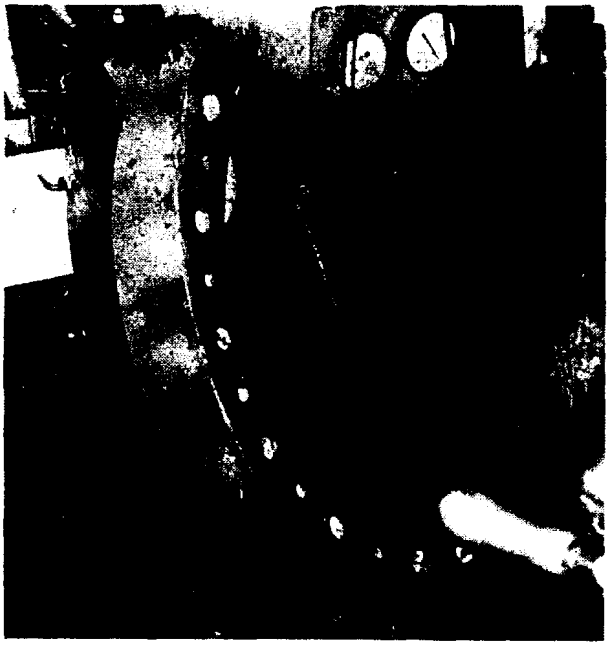

FIG. 4

with blankets and tallow, tightly heaved to fit the ship's bottom by tackles attached to a bottom line fitting over the strongbacks on the cover—see FIGS. 2 and 3. FIG. 3 shows the seal after its removal.

The first concrete box was applied (FIGS. 4 and 6), the strops being subsequently attached to a plate bolted to the top of the flange (FIG. 7). A second tapered concrete box was necessary because of the poor state of the under side of the tube generally. This was secured at one end by a tailor-made band and kept in place on the first box by the existing wire strop. Loose bolts

FIG. 5

FIG. 6

FIG. 7

were grouted into the concrete asit was poured, for fitting the saddle (FIG. 5) in due course. The complete repair is shown in FIG. 7.

Portland Ferro concrete was used throughout with excellent results. The cause of the deterioration is considered to be corrosion and erosion ; A.F.O. 2044/62 not yet having been implemented.

It is not understood why the sea tube should be made of comparatively thin steel plate, bolted to the massive gunmetal valve box. The new tube, if it is necessary to be manufactured in steel, could be at least as thick as the main inlet valve box.