





Double bottom repairs in region of Boiler Room, Engine Room & Deep Tank.

of No 6 D.B. tank: Floors renewed 15 Port & 10 Starboard.

Floors removed, faced & refitted 28 Port & 31 Starboard.

Floors faced in place & stiffeners fitted 15 Port & 14 Starboard.

Frames on above renewed 2 Port & 3 Starboard.

" " " removed, faced & refitted 38 Port & 36 Starboard.

Reverse frames on above renewed one Starboard.

" " " " removed, faced & refitted 39 Port & 37 Starboard.

" " " " faced in place one Starboard.

Intercostals in way of above renewed 4 Port.

" " " " " removed, faced & refitted 94 Port & 100 Starboard.

About 200 defective rivets in centre girder renewed.

Tank margin: One plate (Port side) renewed & two plates (Port) & one (Starboard) cropped & part renewed.

Tank Top Plating: Boiler Room: One plate crop & part renewed. Seven plates removed, faced & refitted, & six faced in place.

Oil fuel bunkers: 2 plates faced in place.

Engine Room: 2 plates faced in place.

Deep tanks: 12 plates renewed & 2 plates faced in place.

House Pipes Both house pipes renewed.

Fire Beak. One beam knee renewed. About 120 defective rivets (unusually) renewed.

Lower stringer (Star) doubling plate (rivets) fitted in way of fracture.

On upper stringer 7 shell lugs (P) renewed, & 7 (Star) renewed.

Chain locker. Three plates in forward bulkhead & three stiffeners (Port) renewed.

Side stringer plates (P & S) cut off & renewed.

Two shell frames (P & S) cropped & part renewed.

Two deck beams & knees in way renewed complete.

Deck over chain locker: 2 plates renewed, & one cropped & part renewed.

Two deck bulkhead in way: Ceiling plate cropped & part renewed & boundary angle removed, faced & refitted.

No 1 hold. Two decks: End attachments of under deck girders to bulkhead riveted. One bracket to same renewed. Three beam knees riveted.

Lower hold: Margin plate (S) fractured in way of frame 168 - fracture welded & rivet doubling plate fitted in way & margin lugs renewed.

7 lugs to tank side knees (P & S) - cut off & renewed.

One gusset angle (P) & two (Starboard) cut off & renewed.

Lower portion of centre line bulkhead cropped & part renewed.

No 10 B Tank. About 520 defective rivets removed in floor, intercostals tank top, & reverse frames.

No 2 hold. upper two decks Riveting of underdeck girders & pillars tested & about 340 defective rivets renewed.

Lower two decks. Two solid pillars (P & S) removed, faced & refitted. Riveting of underdeck pillars & girders tested & about 400 defective rivets renewed.

Lower hold. Riveting of underdeck pillars & girders tested - about 280 defective rivets renewed.

No 2 D.B. tank. Six floors (P & S) faced in place & fitted with 2 stiffeners as compensation.

After tank end faced in place - 2 stiffeners (P & S) removed, faced & refitted.



2 O.B. Tanks. (Cont) About 360 defective rivets renewed in floors, intercostals  
tank top & reverse frames.

3 Hold. Tween deck & lower tween deck. But connecting of underdeck  
girders riveted.

Lower hold. Foundation angle to centre line grain bulkhead (aft), two stiffener  
brackets & seven stiffener foot lugs of same cut-off & renewed.

Riveting of underdeck girders & pillars tested & about 190 defective rivets renewed.

No 3 O.B. tank. Seven tank side knees (P & S) fared in place &  
fitted with angle stiffeners as compensation. Two tank side lugs (P) &  
three (S) removed, fared & refitted. Seven gusset angles (P & S) removed, fared  
& refitted. Intercostal girders (P & S) throughout tanks riveted completely.  
About 2670 defective rivets <sup>renewed</sup> in floors, reverse frames & tank top plating.

Boiler Room Foundation angles of forward bulkhead - one cropper & part  
renewed & one cropper, removed, fared & refitted - butts E.W. One stiffener  
bracket in this bulkhead renewed & 14 brackets removed, fared & refitted.  
Six gusset angles in boiler room renewed & 15 removed, fared & refitted.  
Front side frames fared in place. Two tank side knees renewed  
& two removed, fared & refitted. Defective rivets in boiler stools (renewed  
for access) renewed.

Engine Room Front side frames (P) fared in place. Three tank side  
knees removed, fared & refitted, & one cut-off & renewed.

Screen bulkhead. One plate cropper & part renewed & two plates cut-off & renewed.  
One vertical stiffener cropper & part renewed, & six fared in place. Foundation  
angle cropper & part renewed.

Store room flat Deck plating in way cropper & part renewed & five beam  
knees in way cut-off & renewed.

Oil fuel pump room Plating of forward bulkhead cropper & part renewed.  
One plate renewed & one plate removed, fared & refitted of side bulkhead  
Ten vertical stiffeners, foundation angle & six bracket knees removed  
fared & refitted.

Settings. All main & auxiliary engine settings removed, fared as  
necessary & completely riveted & refitted.

Fuel Bunker (Port side.) Wing plating of after bulkhead cropper & part  
renewed, & boundary angles cropped, removed, fared & refitted - butts E.W.

3 gusset angles & 13 tank side lugs removed, fared & refitted. Foundation  
angle of side bulkhead cropper, removed, fared & refitted - butts E.W.

About 1460 defective rivets renewed in side stringers, knees, side frames,  
& vertical stiffeners.

(Starboard side.) One wing plate of after bulkhead removed, fared, & refitted  
& 2 plates fared in place. One plate of side (for & aft) bulkhead  
renewed, 2 plates cropper & part renewed, one plate & two stiffener  
brackets removed, fared & refitted & one plate fared in place.

Two tank side lugs renewed & 15 removed, fared & refitted.

Seven gusset angles removed fared & refitted. About 1580 defective  
rivets renewed in side stringers, beam knees, side frames & vertical  
stiffeners.



5 Bunker Spaces. One plate of engine casings cropped & part renewed & one plate fared in place. Foundation angle of casings cropped & part renewed. Underdeck girders riveted. Two deck plates of 2nd deck removed, fared & refitted & 2 plates fared in place. Five deck beams removed, fared & refitted. One beam knee renewed & remainder removed fared & refitted.

6 Deep Tanks. Eight second deck plates (deep tank top) fared in place. Five beams & ten half beams in way of deep tank top cut off & renewed. Eight brackets to centre line bulkhead removed, & one removed, fared & refitted. Plate brackets at two pillars (1P & 1S) renewed. Fore end coaming of deep tank hatches renewed. Fore coaming top angles cropped, removed, fared & refitted. Ventilator coamings on deep tank top (1P & 1S) cropped & part renewed.

7 Engine Room Bulkhead (forward bulkhead of deep tank).

One wing plate (P) & three (S) cut off & renewed. Six vertical stiffeners removed, fared, & refitted. Two coaming plates cut off & renewed. Foundation angles (double) renewed full width of bulkhead. One shell bracket (P) & two (S) cut off & renewed. One shell bracket (P) & two (S) removed fared & refitted. 17 brackets at stiffener feet cut off & renewed.

8 Bulkhead of Deep Tank. 21 vertical channel stiffeners & 3 B.A. vertical stiffeners removed, fared, & refitted. Two vertical B.A. stiffeners in wings cropped & part renewed. 15 flange brackets to stiffener feet together with connecting angle to tank top cut off & renewed. 7 horizontal channel stiffeners fitted as compensation at about the half height of the bulkhead. Eight shell bracket & two bulkhead doubling plates removed, fared & refitted. Bulkhead plating seams released & fared in place.

9 Deep tank side hatch covers fared - 4 B.A. stiffeners in same renewed & 6 B.A. stiffeners removed, fared, & refitted.

10 Tunnel. (In way of deep tanks) Four plates (2P & 2S) removed, fared & refitted.

Four plates (2P & 2S) fared in place. Foundation angles (P & S) cut off & renewed. Nine B.A. tunnel rings removed, fared & refitted - tank top brackets to same cut off & renewed. About 840 defective rivets in tunnel stools renewed, & one stool top plate renewed.

11 5 Hold. Underdeck pillars & girders - defective rivets cut out & renewed.

End brackets of girders removed, fared & refitted. Forward centre line (grain) bulkhead fared in place (2 spaces). After centre line bulkhead fared in place (5 spaces) & buckled portions under main mast cropped & part renewed.

Two gusset angles on tank top removed, fared, & refitted & 7 tank top plates fared in place. Foundation angle of tunnel (sid) cropped, removed, fared & refitted.

12 6 Hold. About 180 defective rivets removed in underdeck girders & pillars, & end brackets of girders removed, fared, & refitted. Deck plating over head of star pillar (aft) doubled. Upper strake of plating of forward & after centre line bulkhead fared in place. End plate of tunnel recess removed, fared & refitted.



No 8 D.B. Tank. Nine reverse frames (P) & nine (S) cropped & part renewed. Six floor plates (3P & 3S) welded where fractured (EW). Two tank top doubling plates (P) & one (S) cut off & renewed. One tank side knees (P) & nine (S) cut off & rewelded & tank top legs to same renewed.

After Peak Tank. Five after peak bulkhead plates cut off & renewed. One tank top plate cropped & part renewed. Centre line wash plate cropped & part renewed. Two flanged brackets on tank top renewed. Six frames (3P & 3S) - cropped & part renewed.

upper deck. Plating set down in way of mainmast. Forward deck plates removed, fared, & refitted, & two fared in place. Forward hatch corner doubling plates cut off & renewed. Two corner angles renewed & two renewed fared & refitted. Eight solid pillars removed, fared & refitted, & underdeck girder at head of pillars renewed. Twelve upper deck beams fared in place. One tween deck bulkhead plate removed fared & refitted, & one plate fared in place. Eight vertical stiffeners on tween deck bulkhead together with their bracket connections removed, fared & refitted. On completion of the foregoing repairs all double bottom, peak & deep tanks or fuel bunkers tested under pressure. Shell in way of Nos 2 & 3 holds (insulation removed) was tested.

Special Survey No 3. Special survey No 3 effected in connection with foregoing extensive repairs. Vessel placed in drydock. Bottom & rudder - cleaner, examined & recoated. Holds, peaks, tween decks, & machinery spaces cleared. All close & spar ceiling removed from tank tops & vessels sides in holds, insulation removed in way of insulation hold. Lumber boards removed throughout. Casings of soil, scupper, air & sounding pipes removed. Steel work generally exposed (including plating under side lights). Grudging removed from the surface of the inside shell plating, frames, stringers, hooks, floor plates, keelsons, beams, bulkheads, steel work examined & with exception of parts reported above & under wear & tear (below) found in good condition & coated. It was considered necessary to drill the shell plating. All double bottoms, peaks, & deep tanks, & oil fuel bunkers examined internally & also tested by water pressure. All decks examined. Chain cables & rings examined. Chain locker examined. Anchors, masts, spars, rigging & general equipment examined. Hatch covers, tarpaulins, supports & fastenings examined, also ventilator coverings & their driving appliances. Steering engine & its connections, rudder quadrant, tiller, steering gear, windlass, head pump, watertight doors, & air & sounding pipes examined & found or placed in good condition. Doubling plates found in place under sounding pipes. Freeboards verified.

Wear & tear repairs. Saddleback coal stove One plate cropped & part renewed in after bulkhead, & one plate fared in place & riveted doubling plate fitted. On forward bulkhead plating cropped at Bridge deck level & renewed (plate horizontally). Six vertical stiffeners cropped & part renewed, & twelve bulkhead plates renewed. Corner angles cropped & part renewed. Plating of 2nd deck (P) alongside stove opening fitted with riveted doubling plate.



at & least repairs (cont)

recastle Front. plating in way of steam pipes cropped & part renewed.

Bridge Front. plating - cropped & part renewed in way of steam pipes.

Welder doubling plate filter on coaming plate. upper deck plating & access hatch coaming plate in way also filter with E.W. doublers.

bridge decks. One deck plate (P) renewed & 2 deck plates (P) cropped & part renewed. Two coaming plates of deckhouse casings in way and foundation angle renewed. Two casing side plates removed, faired, & refitted. Three casing side plates cropped & part renewed. Coaming plate of port alleyway renewed. Two transverse bulkheads in port accommodation cropped & part renewed & two transverse bulkheads removed, faired, & refitted. One casing plate on starboard side doubled. Watertight hinged doors at port & starboard entrances to accommodation renewed.

bridge after bulk head Coaming <sup>renewed</sup> in way of tonnage openings (P. & S) & face angles to same renewed. Bulkhead plating in way of steam pipes filter with welder doublers.

at ways No 1 upper deck. Bulk angle stiffeners cut off & renewed on forward & port side - coamings. Port side coaming plate filter with rivets doubling plate. Eight portable beam sockets removed, faired & refitted. Ends of four portable beams cut free & riveted.

No 1 lower deck. Eight portable beam sockets removed, faired, & refitted. Ends of four portable beams cut free & riveted.

No 2 Upper deck. Port side coaming plate & bulk angle stiffener - cut off & renewed. Three portable beam sockets renewed, & three removed, faired & refitted. After <sup>end</sup> coaming doubled & B.A. stiffener - cropped & part renewed.

Bridge decks. Port side coaming plate filter with welder doubling plate. B.A. stiffener on port side coaming cut off & renewed.

4 Bridge deck Port side coaming filter with welder doubling plate. Two portable hatch beams cut free, faired & riveted.

4 upper deck. Four hatch beam sockets faired in place. Two portable hatch beams - cut free, faired, & riveted.

5 upper deck. Port side coaming plate, B.A. side stiffener, & foundation angle renewed. Five portable beam sockets & two corner angles removed, faired & refitted. Five portable beams faired, & ends riveted.

5 second deck. Ten portable beam sockets faired in place. Five portable beams faired & ends riveted.

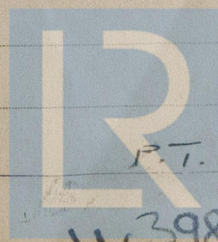
6 upper deck. B.A. stiffeners on forward, port & starboard side coamings cut off & renewed. Forward end & port side coamings filter with rivets doubling plates. Four portable beams faired & ends riveted.

6 second deck. Starboard side coaming cropped & part renewed at after end. Corner angle & one portable beam socket renewed. Seven beam sockets faired in place. Four portable beams faired & ends riveted.

one show hatch Angle coaming cropped & part renewed.

Hatch covers 39 wood hatches renewed.

Hatch Cleats 20 hatch cleats renewed.



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Lloyd's Register

W 398 - Foundation



S.S. GRACIA.

Continuation of Report No. 10,415. dated

on the

MANCHESTER

and low repairs (cont).

rigging. Nine shrouds renewed as per rigging report attached herewith.

The rigging reserved & stretching screws overhauled.

Sounding pipes. The air & sounding pipes examined & pipes partly renewed where required.

T. doors. Three bridges in W.T. doors renewed.

The special survey No 3 - was held on account of the extensive damage repairs required.

Since completing the foregoing however the vessel has been lost due to enemy air action.

H.S.N.



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