

S/S "GRACIA"

REPAIRS.

MAIN PROPELLING MACHINERY. The main engines (Turbines & Gears) were removed in their entirety to Messrs. Metropolitan-Vickers Electrical Co. Manchester, dismantled, examined & the following recommendations were made for repair & overhaul:-

H.P. TURBINE. One bottom half cylinder renewed.

The first ahead row of the velocity wheel - new blades fitted, also to the ahead velocity diaphragm segments.

The rotor of this turbine was slightly bent, but has been satisfactorily dealt with.

The rotor & casing blading throughout has been generally overhauled & an amount of miscellaneous small detail work satisfactorily carried out.

L.P. TURBINE. Complete new top & bottom half cylinders have been supplied.

One new turbine spindle fitted. New blades fitted to first row astern wheel.

New blades have also been fitted to the L.P. 1st & 2nd astern velocity diaphragm segments & this turbine generally overhauled & placed in satisfactory condition. A number of miscellaneous details have also been effected.

GEARCASE. The lower half of this case was fractured & has been repaired in accordance with a drawing now attached. Following this, extensive alignment operations were carried out on pinion & main wheel lines. New bearings were supplied throughout, plus spares, & all gears rebbed & new coupling bolts supplied.

GENERAL REPAIRS. The Aspinall Safety Governors were reconditioned together with the steam strainers, relief valves & nozzle control valves. Oil sprayer pipes were pickled & cleaned, & new carbon gland rings were supplied where necessary.

The main engines & gears were afterwards despatched to Messrs. The Manchester Drydocks Co. for installation on board.

INTERMEDIATE & SCREW SHAFTING. Each length of intermediate shafting, also working & spare screwshafts, examined whilst in the lathe, found good & the coupling faces skimmed to a good surface. Continuous liner of working screwshaft found somewhat scored, & has been skimmed up. Continuous liner of spare screwshaft skimmed up to the same size as on working shaft. Sternbrake removed from sterntube, examined & found good. Lignum vitae completely renewed. Sternbrake hydraulically tested in place on board & found sound & tight. Coupling bolts renewed as required. Propeller examined & found in good order.

AUXILIARY MACHINERY. The following pumps were examined & repaired at Manchester

O.D.C. Ltd:- Aux. Circ. Pump. Suction valve chest renewed & generally overhauled.

Gen. Service Pump. Generally overhauled.

Circ. Pump for Refrig. Machinery. Generally overhauled.

The following items were despatched to Messrs. G. F. Weir Ltd. & dealt with as necessary:- Two Main Feed Pumps & One Aux. Feed Pump with their float tanks.

Dual Air Pump. Oil Fuel Transfer Pump. Two Lub. Oil Pumps. - both renewed.

Feed Heater - Cast Iron bottom header renewed.

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BOILERS. All four boilers cleaned, examined internally & externally, together with all mountings, etc. The boilers were jacked up & their stools removed for access to double-bottom tank repairs.

A few c.c. screw stays found broken in scattered positions & have been renewed. All seams & riveting carefully examined & riveting tested. Minor steam leakages made good by welding or caulking as required.

Main & Auxiliary stop valves & safety valves examined in place on the boilers. C.I. Safety valve chest on Centre boiler found cracked & has been renewed. All other mountings removed from boilers owing to evidence of leakage at the joints to boiler shells. Studs renewed & facings made good as required, & all mountings replaced. All four boilers subsequently hydraulically tested to 250 lb/sq" with all mountings in place & found sound & tight. Mountings generally overhauled. Safety valves of all four boilers subsequently adjusted to 200 lb/sq".

STEERING ENGINE. - removed ashore, stripped & examined, together with its telemotor gear. (Vertical twin-cylinder steam engine). One cast iron column & the soleplate found fractured & have been renewed. Wormwheel spindle found worn & defective in keyways & has been renewed. All other parts reconditioned as required.

WINDLASS. - opened out, examined & generally reconditioned.

RE-ASSEMBLY. All shafting re-aligned & coupled up, special attention being given to the chocks under gearcase & turbines.

All auxiliary machinery satisfactorily fixed to their seatings.

All four boilers properly replaced on their stools after completion of double-bottom tank repairs. Collision chocks repaired as necessary & replaced.

Main & auxiliary steam & fuel piping efficiently coupled up.

Steam smothering system satisfactorily replaced, tested & found in order.

Oil fuel burning pipe lines & fittings replaced in accessible & well-lighted positions, examined under working conditions & found in order.

The whole of the machinery was subsequently tried under steam & all found in good condition.

Electrical Installation Repairs: Both dynamos taken ashore & overhauled. Engine room & storeroom rewired. Wiring & fittings throughout overhauled & put in satisfactory condition.

Additions: - Degaussing cables fitted run through tween decks in heavy gauge metal casing & through refrigerated spaces & bunkers in heavy gauge pipe. Switchboard fitted in dynamo flat & control board in wheelhouse.

On Completion of work with the whole installation was examined, tried & tested for insulation resistance & found satisfactory.

R. C. Clayton

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Both Oil Fuel Pumping + Heating Units were despatched to Messrs. Waltham Slipway + Eng. Co. Ltd. in their entirety for overhaul. The oil headers of both heaters were renewed + a number of other incidentals carried out.

The following items were despatched to Messrs. Thom + Lamont Ltd. for attention:-

Ballast Pump. - ^{Cast Iron} Water end casting renewed completely, + other parts reconditioned

Bilge Pump. - — — — ditto — — — — —

Fresh Water Pump. - — — — — ditto — — — — —

The Main Circulating Pump + its engine were badly fractured in various places + were completely renewed by Messrs. Drysdale Ltd.

Main Condenser. - Stripped + examined. A large number of tubes found wasted in way of ferrules. All tubes renewed. One C.I. end door fractured + now renewed. Condenser tested on completion + found good.

At Manchester
S.D. Co. Ltd.

Aux. Condenser. - Stripped + examined. Some tubes found defective in way of ferrules + renewed as required. Condenser subsequently tested + found sound + tight.

Lab. Oil Cooler. - Cast Iron casing fractured + now renewed. Other parts generally overhauled. Cooler tested on completion + found in order.

Feed Water Filter - badly fractured + renewed by Messrs. Hocking Ltd.

SEA INLET + OVERBOARD DISCHARGE VALVES + COCKS. All removed ashore + examined.

The following ^{Cast Iron} Castings were found to be fractured + were renewed:-

Main Circulating Inlet Valve. Main Overboard Discharge Valve.

Ballast Inlet Valve. Aux. Circulating Inlet Valve. Bilge Injection Valve.

The remainder were generally overhauled. All were replaced with new studs through ship's side plating.

BALLAST, BILGE + OIL FUEL PIPING + FITTINGS. The whole of these systems examined,

those parts in the machinery spaces being removed ashore for this purpose.

A number of ^{Cast Iron} pipes + fittings found broken + have been renewed. Repairs effected to other items as required + the whole of these systems tested hydraulically after assembly on board with satisfactory results.

MAIN + AUX. STEAM PIPING IN MACHINERY SPACES. - All removed ashore, examined,

tested hydraulically to 2x W.P. + found or placed in good order.

MAIN + AUX. FEED PIPING. - All removed ashore, examined, tested hydraulically to 3x W.P.

+ found or placed in good condition. All lengths annealed. One length renewed. Two Cast iron distribution valve chests in Boiler Room, one each for Main + Aux. Feed, found fractured + now renewed. Both new valve chests satisfactorily tested by hydraulic pressure to 500 lb/sq. in.

SEATINGS FOR MAIN + AUX. MACHINERY. - Removed for repairs to themselves + for access

to tank top repairs. For further particulars, see Hull Report. Riveting + fitting work tested after re-assembly on board + all found satisfactory.