30 APR 1956

Rpt. 9

Date of writing report 16th April 1956. Received London Port Antwerp. No. 31190

Survey held at Antwerp. No. of visits 41. First date Nov. 7. 55 Last date April 4th 1956

REPORT OF PERIODICAL SURVEYS & REPAIRS OF MACHINERY

No. in R.B. 13103 Name S.S. ~~M.V.~~ " HILARY " Gross tons 7420 Date of build 1931 8

Owners Booth S.S. C°.Ltd. Managers -- Port of Registry Liverpool.

Engines made do. - By Cammell Laird & C°.Ltd. Bkn. Type T 3Cy. & LP turbine with DR gearing & hydraulic coupling.

No. of Main Engines 1 No. of Screws 1

No. of Main Boilers 5 SB W.P. 230 (Spt)

No. of Aux./Donkey Boilers -- W.P. --

Surveyed Afloat and in Dry Dock City dry dock No 1 and Ant. berth.

Nature of Survey LMC - TS - Pipes and repairs

Was Damage Report issued? No Int. Cert.? Yes

Last Report (For Head Office only) ~~H42760 + CTC~~

Records of Survey & Special Notations as per Register Book

Hull		Machinery	
+ 100 AI. with freeboard.		+ LMC.	MS. 3.52
Dkg.	3.55		BS. 3.55
SS.Ant.	3.52		CL. 7.53N.
OF.	2.49.		

The condition of any of the following items is to be described as "good" only when the part has been examined, found or placed in good condition, and is considered to be acceptable until the due date of the next Periodical Examination. Where it is considered that re-examination or repairs should be effected before the due date of the next Periodical Examination a distinguishing mark thus † should be inserted against the item and the circumstances and action recommended described fully under "defects and repairs". At part or complete Special Surveys those items which are not applicable to the ship should be cancelled with a black line; this need not be done when the machinery is on a continuous survey basis. When any part has been subjected to pressure test this should be stated. Engine parts when referred to by numbers should be counted from forward.

DOCKING Propellers 1 Good Wear Down of Stern Bushes 1/16". Oil Glands -- Sea Connections Good.

Fastenings Good Has Screwshaft/~~Tubeshaft~~ been drawn? yes-good Date of Examination 19.3.56 Has Shaft been changed? no.

Has Shaft now fitted been previously used? -- Has Shaft now examined/~~fitted~~ a continuous liner? yes Approved oil gland? --

MAIN ENGINES (Recip. Steam ~~or I.C.~~) PORT ~~STARBOARD~~

1 Cyls., Covers, Pistons & Rods good.
2 Valves & Gears good
3 Connecting Rods, Top Ends & Guides ~~Side~~ good ~~Centre~~
4 Crankpins & Bearings ~~Side~~ good ~~Centre~~
5 Journals & Bearings good

~~MAIN ENGINE DRIVEN AIR COMPRESSORS~~
6 Cyls., Covers, Pistons & Rods
7 Connecting Rods & Top Ends
8 Crankpins & Bearings
9 Journals & Bearings
10 Coolers & Safety Devices

~~MAIN ENGINE DRIVEN SCAVENGE PUMPS~~
11 Cyls., Covers, Pistons & Rods
12 Connecting Rods & Top Ends
13 Crankpins & Bearings
14 Journals & Bearings
15 Levers
16 SCAVENGE BLOWERS
17 SUPERCHARGERS

~~MAIN TURBINES~~
18 ~~Casings, Rotors, Blading, Bearings & Thrusts~~

19 EXHAUST STEAM TURBINES (WITH RECIP. ENGINES) good
20 ~~STEAM COMPRESSORS~~
21 CLUTCHES & HYDRAULIC COUPLINGS good
22 REDUCTION GEARING good
23 THRUST BLOCKS, SHAFTS & BEARINGS good
24 INTERMEDIATE SHAFTS & BEARINGS good
25 HOLDING DOWN BOLTS & CHOCKS good
26 CONDENSERS (MAIN & AUX.) good (tested).
27 ~~STEAM RE-HEATERS~~
28 ~~DE-SUPERHEATERS~~
29 STOP & MANŒUVRING VALVES good
30 MAIN ENGINE DRIVEN PUMPS good
31 ~~CRANKCASE DOORS & EXPLOSION RELIEF DEVICES~~ Have Main Engines been tested working and manœuvring? yes - good.

OPINION OF MACHINERY AND RECOMMENDATIONS :- The machinery of this vessel is in good and efficient condition and eligible in our opinion, to remain as now classed with fresh records of TS.CL. 3.56 - Steam Pipes 4.56 and + LMC.4.56 when the survey has been completed, subject to port after boiler not being used until further examined and repaired.

If certificate is required state where to be sent

Date of Committee THURSDAY 24 MAY 1956

Decision See Liv 144387

Int assign 5.3.56 SPS 4.56

Port Aft Main Blr. temporarily out of use

For self and others

G. Valckeneers.

Engineer Surveyor to Lloyd's Register of Shipping

30m.6.55. T. (MADE AND PRINTED IN ENGLAND)

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005307-005310-0061

32 Essential Independent Pumps (*Identify by position*) All good.

33 Bilge, Ballast & Oil Fuel Suction Lines, Fittings & Controls good.

34 Have the remaining Piping Arrangements & Fittings in the machinery space been examined as considered necessary? yes - good.

35 ~~Fresh Water Coolers~~ 36 Lub. Oil Coolers Good (tested) 37 Heaters (state service) LP & HP. good tested.

38 ~~Independent Air Compressors, Coolers & Safety Devices~~

39 ~~Air Receivers & Safety devices—Main~~ 40 ~~Auxiliary~~

41 ~~Oil Fuel Tanks (Not forming part of hull structure)~~

42 Evaporators good. 43 Have Evaporator Safety Valves been tested under steam? no

44 Steering Machinery good. 45 Windlass good. 46 Fire Extinguishing Arrangements good.

AUXILIARY ENGINES (*Identify by position*) All - good.

ELECTRICAL EQUIPMENT

~~PROPULSION~~	~~PORT~~	~~STARBOARD~~
a Generators		
b Exciters		
c Air Coolers		
d Motors		
e Air Coolers		
f Control Gear, Cables, etc.		
g Insulation Resistance		
h Insulating Oil Test		
i Overspeed Governors		
j Magnetic Couplings		
k Air Gap		

AUXILIARY EQUIPMENT

1 Generators & Governors good

Motors good

good

Switchboards & Fittings good

Circuit Breakers good

Cables good

Insulation Resistance good

~~Steering Gear Generators and Motors~~

Navigation Light Indicators good.

BOILERS OPENED UP & EXAMINED (*Identify by position and state latest date of internal examination of each boiler*)

MAIN Good. Stbd. aft and stbd forward 21.2.56. Port forward, Center aft 12.3.56. For port after boiler see body of Rpt.

~~AUXILIARY, DONKEY or PRESS~~

Superheaters good

Safety Valves good

Mountings, Doors & Fastenings good

Safety Valves Adjusted to Sat. 230 lb/sq.in. Port forward and centre aft. Spt. 230 lb/sq.in. Port forward and centre aft.

Boiler Securing Arrangements good.

~~Main Economisers~~ ~~Exhaust Gas Heated Economisers~~

~~Steam Heated Steam Generators~~ ~~Steam Generator Safety Valves Adjusted to~~

Were Oil Burning System & Remote Controls examined working in accordance with Rules? yes. ~~Forced Circulating Pumps~~

Have Saturated Steam Pipes in cylindrical boiler smoke boxes been examined as required by Rules? yes. - good. Funnel good.

EXAMINATION & TESTING OF STEAM PIPES (*State material*)

Main steel-good. Auxiliary (over 3 in. bore) steel - good.

~~Were Copper Pipes annealed?~~ Have Saturated Pipes in cylindrical boiler smoke boxes been tested? yes.

PARTICULARS OF DEFECTS & REPAIRS, ETC. (*Damage repairs should be detailed separate from wear and tear repairs; state what action has been taken regarding items which are subjects of class*)

DAMAGES:- stated to have been sustained 1° through vessel grounding in the River Amazone in June 1953. 2° through exhaust steam turbine thrustblock pads running out between the 15th December 1953 and the 23rd. February 1954 whilst on voyage N°.92 to South America and 3° through various groundi in the River Amazone since the last LMC.Survey in March 1952.

NOW DONE:- Damage N°.1. Quill shaft passing through main gear wheel shaft, and coupling examined. Found coupling slack on shaft and coupling faces scored. Quill shaft and coupling removed to works, cone on shaft machined, coupling bore and faces machined, keys renewed, coupling bedded on shaft, alignment of Quill shaft verified and corrected as necessary.

Damage N°.2. Steam exhaust turbine completely opened out and examined. Found a number of rotor and casing blades damaged. Rotor shaft in way of bearir .scored.., bearings and labyrinth packing scored. Rotor and casing blades cleaned, faired, binding wires repaired and badly damaged blading removed Rotor shaft skimmed up in way of bearings and bearings remetalled. Labyrinth packing renewed. Rotor dynamically balanced, clearances and alignment checked.

Contd/..

LEAVE THIS SPACE BLANK

Survey fees LMC, TS, & Rep Fr. 30.000.-

Electr. Installat. & Rep Fr. 5.000.-

RMC Fr. 8.000.-

Damage fee Fr. 8000.-

Expenses Fr. 2050.-

Special attendances Fr. 3740.-

Date when A/c rendered 26-4-56

FOR C.E.S. RECORDS TO NOTE

#858 LL 77

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Damage N°.3. Main condenser water circulating pump opened out and examined, found:- impeller shaft in way of bearing parts, bearings , impeller sealing rings and metallic packings badly scored. Impeller shaft machined, bearings, sealing rings and metallic packings renewed. Main condenser opened out and tested, found a great number of plugged and leaky condenser tubes. All tubes and ferrules renewed. Condenser tested on completion of repairs and found tight.

Machinery repairs for Wear and Tear.

Main Engine.

Crankshaft lifted and main bearings remetalled, shaft bedded and checked for alignment. Crankpins dressed up, HP & MP crank pin bearings remetalled.

Complete line of shafting checked for alignment and found satisfactory. MP crosshead pins skimmed up and bearings renewed. MP valve spindle renewed. HP & LP eccentric straps remetalled. All valve spindles lined out true with eccentric sheaves. Thrustblock oil sealing rings remetalled. All valve gears and way shaft bearings overhauled.

Attached pumps:-

Air pump casing renewed (hydraulically tested), liner bored out and bucket ring renewed, bucket rod skimmed up and bushes renewed.

Bilge pump: pump body renewed, plunger skimmed up and bushes renewed.

Sanitary pump: suction valve chest renewed, plunger skimmed up and bushes renewed.

Main condenser: Doubling plates welded on condenser shell in way of local corrosion. Division plate in water chamber renewed, on completion of repairs condenser tested and found tight.

Aux.condenser: tube plates removed, angles forming flanges on condenser shell renewed. All tubes and ferrules renewed. Both end covers and water chamber renewed. Condenser tested on completion of repairs and found tight.

Independent pumps.

Aux. condenser circulating pump: completely renewed.

Forward sanitary pump: completely renewed.

After sanitary pump: liners, buckets, rods and discharge manifold renewed.

General service pump: liners, bucket and rods renewed.

Starboard main feed pump: water end complete with buckets, rods etc. renewed.

Forward fresh water pump: steam cyl. bored out, pistons and rods renewed.

Both fuel oil pressure pumps: bucket rods skimmed up and bushes renewed. Steam valve chests overhauled.

Main condenser circ.pump steam engines:

Both steam engine crankshafts removed to works, bearing parts machined, bearings remetalled. Piston and valve rods machined and bushes renewed.

Ballast pump: Water end liners bored out, buckets and rods renewed. Steam piston rods skimmed up and bushes renewed, suction and delivery valves overhauled.

Steering engine: steering engine completely overhauled. Main pinion shaft machined and bronze bushes in bracket and wormwheel renewed. Steam control valve link motion overhauled. Tiller guide shoe renewed and quadrant face machined true. Piston and valve rods skimmed up and bushes renewed.

Both steam dynamo engines: piston rods skimmed up and bushes renewed. Bearing parts of crankshafts dressed up and bearings adjusted.

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N°2

Both fan engines: valve casings bored out , piston valves renewed. Piston rods and valve rods skimmed up and bushes renewed.Bearing parts of crankshaft dressed up and bearings adjusted.

Windlass.driving shaft pinion renewed. Top end pins and bushes renewed. Piston and valve rods skimmed up and bushes renewed. Crosshead shoes renewed.

LP. Feed water heater.all tubes renewed, hyd.tested on completion and found tight.

Pumping arrangements: A great number of wasted bilge and ballast pipes renewed. Practically all flange bolts of piping under engine room platform renewed. Suction. and delivery valve chests in bilge and ballast lines overhauled. Distance control spindles of oil fuel tank suction valves overhauled.

Alteration to pumping arrangements have been carried out as per approved plan I6.2.56.

Main steam pipes: one length of saturated main steam pipe renewed,tested to 460 lbs/sq. in. hyd. press.

Main Engine holding down bolts overhauled.

Electrical equipment.

Main and emergency switch boards, section and distribution fuse boards completely overhauled. Fuses and fuse holders, switches renewed as found necessary.

All electric cables and fittings in boiler room, galley and under main engine cylinders renewed.

Electric wiring in accommodation port and starboard side of boiler room and engine room casings on main deck renewed. New electric wiring and fittings in extension to crew accommodation installed.

A great number of electric cables and fittings throughout the vessel renewed or overhauled as found necessary. All ventilator motors and starters overhauled.

Two fan motors for refrigerated cargo chambers and two F I2 condenser sea water cooling pump motors connected to main switchboard with fuses and switches as per Rule requirements.

Polychloroprene compound sheathed cables installed as per Rules for distant thermometers (see approved plan I0.2.56).

Boilers Repairs.

All superheater elements removed, cleaned, tested and a number of defective elements renewed. Joint faces on headers and elements dressed up and all joints renewed.

Superheaters hydraulically tested completely assembled and found tight.

90% of all boiler lagging renewed and protection plates dealt with as found necessary.

All boiler mountings reconditionned and overhauled. Smoke box and uptake plating of all boilers partly renewed as found necessary.

Port forward boiler: 8 stay tubes and 5 plain tubes renewed. 4 screwed c.c . stays renewed.

Starboard forward boiler: 4 stay tubes and 4 plain tubes renewed. 3 screwed c.c. stays renewed.

Starboard after boiler: 6 stay tubes renewed. I5 screwed c.c. stays and 4 c.c. girder stays renewed.

Center after boiler: 5 stay tubes and 6 plain tubes renewed. Three slightly leaky rivets in lower butt strap removed, rivet bores polished and magna-fluxed, no signs of chemical cracking were found in butt strap or shell plating. The three rivets in lower butt strap renewed. Starboard c.c. wrapper plate cropped and part renewed with four new stays for access to the above butt strap rivets.

A great number of plain and stay tubes expanded and air tubes renewed in the above boilers.

Port after boiler: When scaling lower butt strap one rivethead dropped off. Five rivets

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were removed and bores magna-fluxed and in each case numerous cracks were found. Part of the outer butt strap was removed and sent to the Research Department for metallurgical examination, extensive cracks were found on the faying faces of the shell plate in way of the partly removed butt strap. The metallurgical examination proved the cracks to be of a chemical nature. The Owners have decided, for the present at least not to repair the boiler and all connections viz:- steam, scum and blowdown, feed lines etc., have been removed and blanked off.

It is recommended that the port after boiler not to be used until further examined and repaired.

All butt strap rivets and rivets in circumferential seams of the remaining boilers carefully examined and hammer tested internally and externally and found sound.

All boilers except the port after boiler hydraulically tested on completion of repairs and found tight.

A great number of other minor repairs have been carried out at this time.

To complete the LMC. SURVEY the safety valves of the starboard forward and starboard after boilers and of evaporator to be adjusted, and pumping arrangements to be tried under working conditions on vessel's arrival in Liverpool to which port she is now proceeding.

10m.d.53. T. (MADE AND PRINTED IN ENGLAND.)