4a.

REPORT ON STEAM TURBINE MACHINERY. No. 15283

Received at London Office 12 NOV 1951

... of writing Report ... 19 ... When handed in at Local Office 5. 11. 1951 Port of BELFAST.

... in Survey held at BELFAST. Date, First Survey 2nd May 1950 Last Survey 8 Oct 19 51

... g. Book. (Number of Visits 274)

... on the T.S. S.S. "RHODESIA CASTLE" Tons { Gross 17040.76. Net 9434.56.

...lt at BELFAST. By whom built HARLAND & WOLFF. LTD. Yard No. 1431 When built 10/51.

...gines made at — do — By whom made — do — Engine No. 1431. When made 10/51.

...lers made at — do — By whom made — do — Boiler No. P. 1479. S. 1480. Gr. 1481. When made 10/51.

...ft Horse Power at Full Power 12,000 MAX 14,400. Owners UNION CASTLE MAIL S.S. Co. LTD. Port belonging to LONDON.

...e. Horse Power as per Rule 2940. Is Refrigerating Machinery fitted for cargo purposes YES (UNCLASSED) Is Electric Light fitted YES.

...de for which Vessel is intended OCEAN GOING.

...AM TURBINE ENGINES, &c.—Description of Engines 2 SETS. REACTION. TR. EXP. D.R. GEARING.

...of Turbines Ahead 3 (EACH) Astern 2 (EACH) Direct coupled, single reduction geared, double reduction geared } to TWIN. propelling shafts. No. of primary pinions to each set of reduction gearing 3.

...coupled to { Alternating Current Generator ✓ phase ✓ periods per second / Direct Current Generator } rated ✓ Kilowatts ✓ Volts at ✓ revolutions per minute;

...pplying power for driving ✓ Propelling Motors, Type ✓

... ✓ Kilowatts ✓ Volts at ✓ revolutions per minute. Direct coupled, single or double reduction geared to ✓ propelling shafts.

...BINE / ...DING.	H.P. HEIGHT OF BLADES.	H.P. DIAMETER AT TIP.	H.P. NO. OF ROWS.	I.P. HEIGHT OF BLADES.	I.P. DIAMETER AT TIP.	I.P. NO. OF ROWS.	L.P. HEIGHT OF BLADES.	L.P. DIAMETER AT TIP.	L.P. NO. OF ROWS.	ASTERN. HEIGHT OF BLADES.	ASTERN. DIAMETER AT TIP.	ASTERN. NO. OF ROWS.
...Expansion	0.57"	15.14"	7.	0.9"	18.8"	4.	1.615"	38.23"	1.			
...	0.72"	15.44"	7.	1.21"	19.42"	4.	1.965"	38.93"	1.	H.P. ASTERN. IMPULSE.		
...	0.91"	15.82"	7.	1.66"	20.32"	4.	2.36"	39.72"	1.	1.02"	26.02"	1.
...	1.18"	16.36"	7.	2.00"	21.00"	3.	2.86"	40.72"	1.	1.92"	26.92"	1.
...				2.7"	22.4"	3.	3.575"	42.15"	1.	3.3"	28.3.	1.
...							4.375"	43.76"	1.			
...							5.42"	45.86"	1.	L.P. ASTERN. IMPULSE.		
...							6.445"	47.89"	1.	1.44"	43.44"	1.
...							7.64"	50.28"	1.	2.57"	44.57"	1.
...							8.435"	51.87"	1.	4.29"	46.29"	1.
...							9.43"	53.86"	1.			
...												

...Horse Power *at each turbine* { H.P. 2100. ✓ I.P. 1975. ✓ L.P. 1925. ✓ } **Revolutions** *per minute, at full power, of each Turbine Shaft* { H.P. 4756. I.P. 4756. L.P. 2854. } *1st reduction wheel* 819. *main shaft* 100. ✓

... Shaft *diameter at journals* { H.P. 5" I.P. 5" L.P. 7" } WITH 2" BORE HOLE. **Pitch Circle Diameter** { *1st pinion* HP+IP 7.7127" LP 12.8546. *1st reduction wheel* 44.7768". *2nd pinion* 14.6493". *main wheel* 120.0217". } **Width of Face** { *1st reduction wheel* 16½" + 3" GAP. *main wheel* 38½" + 3" GAP. }

...nce between centres *of pinion and wheel faces and the centre of the adjacent bearings* { *1st pinion* 14½". *2nd pinion* 24". } *1st reduction wheel* 15" FOR: 18" AFT. *main wheel* 27¼".

...le Pinion ...s, *diameter* { 1st ✓ 2nd 6½". ✓ } **Pinion Shafts,** *diameter at bearings* External / Internal 1st { HP+IP 4¾" LP 5½" / LP 1¾" } 2nd { 10½" / 7¾" } *diameter at bottom of pinion teeth* { 1st HP+IP 9.3669. LP 12.7088. 2nd 13.8011". }

... Shafts, *diameter at bearings* { 1st 8". main 20". ✓ } *diameter at wheel shroud,* { 1st ✓ main 115". } **Generator Shaft,** *diameter at bearings* ✓

...ediate Shafts, *diameter* as per rule ... as fitted 16 3/8". ✓ **Thrust Shaft,** *diameter at collars* as per rule ... as fitted 17 1/8" ✓

... Shaft, *diameter* as per rule ... as fitted ✓ **Screw Shaft,** *diameter* as per rule ... as fitted 17 7/8". ✓ *Is the* ~~tube~~ / screw *shaft fitted with a continuous liner* Yes.

... Liners, *thickness in way of bushes* as per rule ... as fitted 7/8". ✓ *Thickness between bushes* as per rule ... as fitted 21/32". ✓ *Is the after end of the liner made watertight in the ... boss* Yes. ✓ *If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner* ✓ *... iner does not fit tightly at the part between the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive* ✓ *... iners are fitted, is the shaft lapped or protected between the liners* ✓ *Is an approved* **Oil Gland** *or other appliance fitted at the after end of the tube* No. *If so, state type* ✓ *Length of Bearing in* **Stern Bush** *next to and supporting propeller* 6'-0" ✓

...ller, *diameter* 18'-0" *Pitch* 23.15'-20.9' *No. of Blades* 3. *State whether Moveable* SOLID *Total Developed Surface* 101.8 *square feet.*

...e Screw, *are arrangements made so that steam can be led direct to the* **L.P. Turbine** ✓ *Can the* **H.P. or I.P. Turbine** *exhaust direct to the ...r* ✓ *No. of Turbines fitted with astern wheels* ✓ **Feed Pumps** { *No. and size* 3. 1@ 180,000 lbs/hr. 1@ 170,000 1@ 20,000. *How driven* ELECTRIC MOTOR. STEAM. ELECTRIC MOTOR. }

... connected to the **Main Bilge Line** { *No. and size* 2 BILGE & BALLAST. 135 TONS/HR. 1 FIRE & BILGE. 135 TONS/HR. 1 EMERGENCY BILGE PUMP. 135 TONS/HR. *How driven* ALL ELECTRIC MOTORS. }

... Pumps, *No. and size* 2 - 135 TONS/HR. **Lubricating Oil Pumps,** *including Spare Pump, No. and size* 3. 45 TONS/HR.

... independent means arranged for circulating water through the **Oil Cooler** Yes. ✓ **Suctions,** *connected to both Main Bilge Pumps and Auxiliary Bilge No. and size: — In Engine and Boiler Room* E.R. 2-3½". 2-2". B.R. 2-3½" ✓ *In Pump Room* ✓

... &c. No 1 - 3½" P+S. No 2 - 3½" P+S. No 3 - 3½" P. Ch + S. No 4 - 3½" Ch. No 5 - 3½" P+S.

...ater Circulating Pump Direct Bilge Suctions, *No. and size* 4-11" (2P+2S) **Independent Power Pump Direct Suctions** *to the Engine Room ... o. and size* E.R. 1@6". 1@6". B.R. 2@5". *Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes* Yes. ✓

... ilge Suctions in the Machinery Space led from easily accessible mud-boxes, placed above the level of the working floor, with straight tail pipes to the bilges Yes (WHERE PRACTICABLE)

...ea Connections *fitted direct on the skin of the ship* Yes + F.B. BOXES ✓ *Are they fitted with Valves or Cocks* Yes. BOTH. ✓

... xed sufficiently high on the ship's side to be seen without lifting the stokehold plates Yes. ✓ *Are the Overboard Discharges above or below the deep water line* BELOW. ✓

... ach fitted with a Discharge Valve always accessible on the plating of the vessel Yes. ✓ *Are the Blow Off Cocks fitted with a spigot and brass covering plate* Yes. ✓

... s pass through the bunkers ✓ *How are they protected* ✓

... s pass through the deep tanks ✓ *Have they been tested as per rule* ✓

... pes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times Yes. ✓

... ngement of valves and their connections such as to prevent the possibility of water passing from the sea or from water tanks into the cargo or machinery spaces, or from one ... t to another Yes. ✓ *Is the Shaft Tunnel watertight* Yes. ✓ *Is it fitted with a watertight door* Yes. ✓ *worked from* BULKHD DECK.

ADM 27.11.51

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BOILERS, &c.—(Letter for record 3.4.51) Total Heating Surface of Boilers 19551 sq ft DESIGN 505 lbs/o" Working Pressure 495 lbs/o"

Is Forced Draft fitted YES. No. and Description of Boilers 3 W.T. "B&W" INTEGRAL FURNACE (2 DRUM) TYPE.

Is a Report on Main Boilers now forwarded? YES.

Is { a Donkey / an Auxiliary } Boiler fitted? YES. (2 COCHRAN TYPE) If so, is a report now forwarded? YES. GLASGOW REPORTS Nos 77131 77132.

Is the donkey boiler intended to be used for domestic purposes only No.

Plans. Are approved plans forwarded herewith for Shafting 13.4.50. Main Boilers 3.4.50. Auxiliary Boilers ✓ Donkey Boilers SEE GLA REPORT
(If not state date of approval) DRAWINGS RETAINED FOR USE ON SISTER SHIP. YARD No 1432.

Superheaters SUBMITTED THRO GLASGOW. General Pumping Arrangements 6.6.51. Oil Fuel Burning Arrangements 6.6.51.

Has the spare gear required by the Rules been supplied YES. SPARE GEAR.

State the principal additional spare gear supplied SEE ATTACHED LIST.

FOR HARLAND AND WOLFF, LIMITED
Fred V. Spark
Secretary.

The foregoing is a correct description, Manufacturer

Dates of Survey while building

During progress of work in shops: 1950 May 2 June 13.15.16.20.23.26.27.29.30 July 5.6.17.21.26.27.31 Aug 2.7.8.9.11.14.15.21.22.24.28.30. Sept 1.4.5.6.7.8.13.14.15.19.20.22.25.26.28. Oct 2.3.4.5.6.9.10.11.12.16.17.18.19.20.23.24.25.26.27.30.31 Nov 1.2.6.7.8.9.16.17.21.22.23.24.28.29. Dec 4.5.6.8.11.14.19.20.28 1951 Jan 2.3.4.5.8.9.10.11.16.17.18.19.22.23.25.29.30.31 Feb 1.2.3.6.

During erection on board vessel: 13.14.15.16.18.19.20.21.22.23.26.27.28. Mar 1.2.5.6.7.8.9.12.13.14.15.16.19.20.21.22.23.28.29.30.31 April 2.3.4.5.6.9.11.12.13.17.18.19.20.23.24.25.26.27.30 May 1.2.3.4.7.8.9.11.14.15.16.17.18.21.22.23.24.25.28.29.31 June 1.4.5.6.8.11.12.13.19.20.21.22.25.26.27.28.29 July 2.3.4.5.6.18.20.23.24.25.26.27.31 Aug 1.2.3.6.7.8.9.10.13.14.15.17.20.22.23.28.29.30.31 Sept 1.3.4.5.6.10.11.12.13.14.17.18.19.20.21.22.23.24.25.26.27.28 Oct 1.2.3.4.5.6.8

Total No. of visits = 274

Dates of Examination of principal parts—Casings 28.12.51 - 20.3.51. Rotors 19.2.51 - 21.3.51 Blading 19.2.51 - 21.3.51. Gearing 19.12.50 - 23.4.51. P. 17.1.51.
Wheel shaft 5.16.8.51. P. 27.2.51. Thrust shaft 5.20.2.51. P. 20.2.51. Intermediate shafts 17.1.51 - 22.3.51. Tube shaft ✓ Screw shaft 5.17.1.51.
Propeller 5.16.3.51. P. 22.3.51. Stern tube 21.11.50 - 22.11.50. Engine and boiler seatings 17.5.51 - 20.6.51. Engine holding down bolts 15.6.51 - 28.8.51 - 25.9.51.
Completion of fitting sea connections 30.3.51 Completion of pumping arrangements 4.10.51 Boilers fixed 17.5.51. Engines tried under steam 27.9.51.
Main boiler safety valves adjusted 20.9.51. Thickness of adjusting washers P. 13/32" S. 3/4" Supre 3/8". PORT. P. 7/16" S. 3/8" Supre 3/8". CENTRE. P. 7/16" S. 3/8" Supre 3/8". STAR.
Rotor shaft, Material and tensile strength S.M. STEEL. U.T.S. 35.2 - 37.6. Identification Mark
Flexible Pinion Shaft, Material and tensile strength S.M. STEEL. U.T.S. 28/32. Identification Mark SEE ATTACHED LIST.
Pinion shaft, Material and tensile strength S.M. STEEL. U.T.S. 41 - 46. Identification Mark
1st Reduction Wheel Shaft, Material and tensile strength S.M. STEEL. U.T.S. 32 - 35. Identification Mark
Wheel shaft, Material S.M. STEEL. Identification Mark SEE LIST. Thrust shaft, Material S.M. STEEL. Identification Mark SEE LIST.
Intermediate shafts, Material S.M. STEEL Identification Marks SEE LIST. P.S. 7482 - R.O.B. Tube shaft, Material ✓ Identification Marks ✓
Screw shaft, Material S.M. STEEL. Identification Marks S.B. 7542 - R.O.B. Steam Pipes, Material STEEL. MAIN Test pressure 1470 lbs/ AUX " " 1500 lbs/
Date of test MAIN STEAM PIPING:- NOTTINGHAM REPORT No C 13654. Is an installation fitted for burning oil fuel YES.
Is the flash point of the oil to be used over 150°F. YES. Have the requirements of the Rules for the use of oil as fuel been complied with YES.
Is the vessel (not being an oil tanker) fitted for carrying oil as cargo No. If so, have the requirements of the Rules been complied with ✓
If the notation for ice strengthening is desired, state whether the requirements in this respect have been complied with ✓
Is this machinery a duplicate of a previous case No If so, state name of vessel ✓

General Remarks (State quality of workmanship, opinions as to class, &c.) These Engines have been constructed and installed under Special Survey in accordance with Rules, approved plans and Secretary's Letter. The materials were manufactured at Works approved by the Committee, and under the supervision of the Society's Surveyors. The workmanship is satisfactory. On completion, the machinery was examined under full working conditions with satisfactory results. The machinery of this vessel is eligible in our opinion to be Classed in the Register Book with the record + LMC 10/51, T.S. (C.L) (2) W.T.B. 495 lbs/o" 2 D.B. 100 lbs/o". (A few outstanding items were dealt with in London) Copy of Certificate & Forging Certificates retained pending completion of sister vessel, Yard No. 1432.

The amount of Entry Fee ...	£ 506.	: 0.	0. :
WELDED BOILERS.	49.	10.	0.
Special WELD STRUCTURE	£ 13.	: 0.	0. :
AUX ENGINES.	99.	0.	0.
Donkey Boiler Fee ...	£	:	:
AUX. WELDED STRUCTURE	4.	17.	6.
Travelling Expenses (if any)	£	:	:
AIR RECEIVERS.	12.	0.	0.

When applied for, 9.11.1951

When received, ...19....

A. Faulds & J. B. Smail.
Engineer Surveyors to Lloyd's Register of Shipping.

Committee's Minute TUES. 4 DEC 1951

Assigned +LMC 11.51

FITTED FOR OIL FUEL 11/51 FLASH POINT ABOVE 150°F. F.D. C.L.

3 WTB 495 lb (Spt 485 lb) 2 DB 100 lb.

Certificate (if required) to be sent to.....

The Surveyors are requested not to write on or below the space for Committee's Minute.

RECEIVED ... DEC ... MAY 1951 D.O.

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