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NEWCASTLE-ON-TYNE, 102540

24 MAY 1944

REPORT ON STEAM TURBINE MACHINERY. No. 18550

190 Apt. 4a.
IN D.O.
475
in fur
at full
Litter
21st
1944
Wesley

Date of writing Report 20/5/1944 When handed in at Local Office 22/5/1944 Port of W. Hartlepool
No. in Survey held at Hartlepool Date, First Survey 17th Dec, 1943 Last Survey 15th May, 1944
Reg. Book. on the EMPIRE DYNASTY.
Built at Sunderland By whom built J. L. Thompson & Son Yard No. 631 When built 1944
Engines made at Hartlepool By whom made Richardson & Co. Engine No. 2744 When made 1944
Boilers made at " By whom made " Boiler No. 2744 When made 1944
Shaft Horse Power at Full Power 6800 Owners Man. of War Transport. Port belonging to
Nom. Horse Power as per Rule 1215 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes
Trade for which Vessel is intended 1226.

TEAM TURBINE ENGINES, &c.—Description of Engines Double Reduction Geared Turbines
No. of Turbines Ahead 2 Direct coupled, single reduction geared to 1 propelling shafts. No. of primary pinions to each set of reduction gearing 2
Astern 1 double reduction geared
Direct coupled to Alternating Current Generator phase periods per second rated Kilowatts Volts at revolutions per minute;
for supplying power for driving Propelling Motors, Type
rated Kilowatts Volts at revolutions per minute. Direct coupled, single or double reduction geared to propelling shafts.

TURBINE	H. P.			I. P.			L. P.			ASTERN.		
	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.	HEIGHT OF BLADES.	DIAMETER AT TIP.	NO. OF ROWS.
ST EXPANSION	1.23	17.46	7				7/8	39 3/4	3	Rotor 4	49 1/2	1
ND	1.52	18.04	7				1.324	Cyl.	1	" 7	52 3/4	1
RD	1.68	18.36	6				1.896	base	1	" 9	55	1
TH	2.07	19.14	6				2.468	tapered	1	Impulse Blading		
TH	2.58	20.16	6				3.109	between	1			
TH	above blading proceeds by 2 Row impulse wheel as far as possible below						3.824	1st	1			
TH							4.539	4	1	NOTE all dimensions given in inches		
TH							5.31	12 1/2	1			
TH	7.15	30.47	1				6.13	expansion	1			
TH	1.68	31.69	1				7.047		1			
TH							8.185		1			
TH							9	56	1			

Shaft Horse Power at each turbine { H.P. 3500 ✓ I.P. ✓ L.P. 3300 ✓
Revolutions per minute, at full power, of each Turbine Shaft { H.P. 5" ✓ I.P. 9.426" HP ✓ L.P. 2863 ✓
Pitch Circle Diameter { 1st pinion 13.068" 1st reduction wheel 51.204" 1st reduction wheel 431 ✓
2nd pinion 19.789" main wheel 124.647" main shaft 116 ✓
Distance between centres of pinion and wheel faces and the centre of the adjacent bearings { 1st pinion 10 1/8" 1st reduction wheel 2'-8 1/8" ✓
2nd pinion 16 3/4" main wheel 20" ✓
Flexible Pinion Shafts, diameter { 1st 11" ✓ Pinion Shafts, diameter at bearings { External 1st 6" 7 1/2" 2nd 11" ✓
Internal 1st 12 1/2" 2nd 5" diameter at bottom of pinion teeth { 1st 8.91, 12.552" ✓
2nd 18.941" ✓
Wheel Shafts, diameter at bearings { 1st 11" ✓ { 1st 3'-11" ✓ Generator Shaft, diameter at bearings ✓
main 17 1/2" diameter at wheel shroud, { main 9'-11 3/4" Propelling Motor Shaft, diameter at bearings ✓
as per rule 15.54" ✓ Thrust Shaft, diameter at collars as per rule 16.31" ✓
as fitted 16 Intermediate Shafts, diameter as fitted 17" ✓
Tube Shaft, diameter as per rule 17.04" ✓ as fitted 17 3/4" ✓ Is the { tube screw } shaft fitted with a continuous liner { Yes ✓
as fitted 17 3/4" ✓ as fitted 17 3/4" ✓ as fitted 17 3/4" ✓
Bronze Liners, thickness in way of bushes as per rule 8.21" ✓ as fitted 7 1/8" ✓ Thickness between bushes as per rule 6.15" ✓ Is the after end of the liner made watertight in the propeller boss Yes ✓
If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner ✓
the liner 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 ✓
two liners 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 ✓
If so, state type ✓ Length of Bearing in Stern Bush next to and supporting propeller 5'-10" ✓
Propeller, diameter 18'-0" Pitch Varying No. of Blades 4 ✓ State whether Moveable NO ✓ Total Developed Surface 121 ✓ square feet.
Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine Yes ✓ Can the H.P. or L.P. Turbine exhaust direct to the condenser Yes ✓ No. of Turbines fitted with astern wheels one ✓ Feed Pumps { No. and size 2-3" Turbo Feed Pumps (Wear) ✓
How driven Steam ✓
Pumps connected to the Main Bilge Line { No. and size 1-5" Fire & Bilge (Drysdale) & 1-8" Ballast (Drysdale) ✓
How driven Electric ✓
Ballast Pumps, No. and size 1-8" Drysdale ✓ Lubricating Oil Pumps, including Spare Pump, No. and size 2-5" Drysdale ✓
Are two independent means arranged for circulating water through the Oil Cooler Yes ✓ Suctions, connected to both Main Bilge Pumps and Auxiliary Bilge pumps, No. and size:—In Engine and Boiler Room 4-3 1/2" 6" & 8" Pipe ✓ plus one of 3 1/2" on P. side at forward side of P. in Pump Room ✓
Holds, &c. 2-3" No 1 Hold, 2-3" No 2 Hold, 2-3 1/2" No 3 Hold, 2-3 1/2" Cargo Tank, 2-3" No 5 Hold, 2-3" No 6 Hold ✓
Main Water Circulating Pump Direct Bilge Suctions, No. and size 1-13 1/2" ✓ Independent Power Pump Direct Suctions to the Engine Room
Pipes, No. and size 1-5 1/2" Ballast Pump (S) ✓ Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes Yes ✓
Are the Bilge 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 ✓
Are all Sea Connections fitted direct on the skin of the ship Yes ✓ Are they fitted with Valves or Cocks Both ✓
Are they fixed 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 ✓
Are they each 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 ✓
Do pipes pass through the hatches all for bilge ballast & oil fuel ✓ How are they protected Special tunnel ✓
Do pipes pass through the deep tanks through tunnel ✓ Have they been tested as per rule ✓
Are all Pipes, Cocks, Valves, and Pumps in connection with the machinery and all boiler mountings accessible at all times Yes ✓
Is the arrangement 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 compartment to another Yes ✓ Is the Shaft Tunnel watertight Yes ✓ Is it fitted with a watertight door No ✓ worked from escape hatch for ✓

BOILERS, &c.—(Letter for record *5*) Total Heating Surface of Boilers *6840 sq. ft.*
Is Forced Draft fitted *Yes* No. and Description of Boilers *2 Foster Wheeler D Type* Working Pressure *480 lb.*
Is a Report on Main Boilers now forwarded? *Yes*

Is *a Donkey* Boiler fitted? *Yes* If so, is a report now forwarded? *No*
(an Auxiliary)
Is the donkey boiler intended to be used for domestic purposes only *No. — also for Steam to Evaporator & Distiller, and*

Plans. Are approved plans forwarded herewith for Shafting *18/6/42* Main Boilers *18/6/42* Auxiliary Boilers Donkey Boilers
(If not state date of approval)

Superheaters *22/7/42* General Pumping Arrangements *3/6/43* Oil Fuel Burning Arrangements *3/6/43*
SPARE GEAR.

Has the spare gear required by the Rules been supplied *Yes. And*

State the principal additional spare gear supplied *As per Specification*

For RICHARDSONS, WESTGARTH & Co. LIMITED.

W. B. Forbridge.

DIRECTOR Manufacture

The foregoing is a correct description,

Dates of Survey while building { During progress of work in shops -- 1943. Jan. 17. 24. 26. April 1. 29. May 14. 18. 23. June 3. 17. July 2. 5. 14. 19. Aug. 20. 24. 25. 26. 31. Sept. 5. 13. 18. 24. 30. 7. 11. 12. 16. 18. 19. 23. 26. 28. Nov. 2. 8. 11. 18. 24. 29. Dec. 9. 14. 21. 28. 29. 1944. Jan. 4. 6. 10. 11. 18. 19. 27. 28. 29. 3. 7. 8. 10. 12. 14. 16. 17. 18. 22. 24. 25. 28. 29. March 2. 3. 7. 8. 9. 16. 30. 31. 32. 34. 27. 29. 30. 31. April 4. 5. 20. 24. 28. May 1. 5. 9. 12. 15
During erection on board vessel ---
Total No. of visits *95*

Dates of Examination of principal parts—Casings *28/10/43* Rotors *9/11/43* Blading *20/11/43* Gearing *10/3/44*
Wheel shaft *13/1/44* Thrust shaft *11/2/44* Intermediate shafts *4/4/44* Tube shaft *✓* Screw shaft *3/3/44*

Propeller Stern tube *5/4/44* Engine and boiler seatings Engine holding down bolts

Completion of fitting sea connections Completion of pumping arrangements Boilers fired Engines tried under steam

Main boiler safety valves adjusted Thickness of adjusting washers

Rotor shaft, Material and tensile strength *steel 34/38* Identification Mark *5823 WH. 6168, 5855*

Flexible *Coupling* Shaft, Material and tensile strength *steel 28/32* Sleeves *34/38 steel* Identification Mark *1092 T.T.*

Pinion shaft, Material and tensile strength *nickel steel 40* Identification Mark *86450, J2388*

1st Reduction Wheel Shaft, Material and tensile strength *nickel steel 40* Identification Mark *6504 WH, J2438*

Wheel shaft, Material *steel* Identification Mark *6500 WH.* Thrust shaft, Material *steel* Identification Mark *12888 H.*

Intermediate shafts, Material *steel* Identification Marks *26 AEG 19 8100, 8101, 24 AEG 8665, 8627 ERB*

Screw shaft, Material *steel* Identification Marks *12888 HAT* Steam Pipes, Material *steel* Test pressure *1290 lb 1350 lb*

Date of test *15/1/43, 31/3/44* Is an installation fitted for burning oil fuel

Is the flash point of the oil to be used over 150°F. Have the requirements of the Rules for the use of oil as fuel been complied with

Is the vessel (not being an oil tanker) fitted for carrying oil as cargo. 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 *Yes* If so, state name of vessel *R.W. 2739*

General Remarks (State quality of workmanship, opinions as to class, &c.) *The engines & boilers of this vessel have been constructed under Special Survey & in accordance with the approved plans & Specification. The workmanship & materials have been found good.*

The machinery has been forwarded to the Tyne for fitting on board Messrs. Thompson & Co. Ltd. York No 634.

The machinery of this vessel will be eligible, in my opinion, to be taken into consideration for the record of + L.M.C. - with date - on completion.

The machinery has been efficiently fitted on board. Rpt. H.A. See also new Rpt. H.A. A. Watt Newcastle 26/1

Clive Bell.
Engineer Surveyor to Lloyd's Register of Shipping.

The amount of Entry Fee ... £ *6* : - : When applied for,

Special *4 LMC less 3 drums* £ *95* : *19* : *7* 22/5/1944

Donkey Boiler Fee ... £ : : When received,

Supervision £ *28* : *13* : *8*

Committee's Minute *FBL 5 JAN 1945*

Assigned *Su F.F. machy rpt*