

Report on Steam Turbine Machinery.

No. 112296

pt. 4a.

NOV 1944

Date of writing Report 1. 11. 1944 When handed in at Local Office 6. 11. 1944 Port of London Received at London Office 23 NOV 1944

No. in Survey held at Rugby Date, First Survey 14. 12. 43 Last Survey 27. 10. 1944

Reg. Book on the Turbine driven Geared Generating Sets for Swan Hunter Ship N°1689 (Number of Visits 29) Tons (Gross 1266) (Net 773)

Built at Newcastle By whom built Swan Hunter & Wigham Yard No. 1689 When built

Generating Engines made at Rugby By whom made Messrs B.T.H. Co. Ld. Engine No. R2508 When made 1944

Boilers made at By whom made Engine No. R2509 When made 1944

Shaft Horse Power at Full Power Owners Boiler No. When made

Nom. Horse Power as per Rule Is Refrigerating Machinery fitted for cargo purposes Port belonging to

Trade for which Vessel is intended Is Electric Light fitted

TEAM TURBINE ENGINES, &c.—Description of Engines 2- Single Reduction Geared Impulse Turbines

No. of Turbines Ahead one per set Direct coupled, single reduction geared to each Generator

Direct coupled to Alternating Current Generator phase periods per second Direct Current Generator rated 550 Kilowatts 220 Volts at 1000 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 LADING. | 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. |
| 1st Expansion | .40 | 14.56 | 2 Row | | | | | | | | | |
| 2nd | .70 | 14.76 | Wheel. | | | | | | | | | |
| 3rd 2nd | .98 | 13.62 | 1 | | | | | | | | | |
| 4th 3rd | 1.20 | 14.06 | 1 | | | | | | | | | |
| 5th 4th | 1.47 | 14.60 | 1 | | | | | | | | | |
| 6th 5th | 1.89 | 15.44 | 1 | | | | | | | | | |
| 7th 6th | 1.71 | 18.78 | 1 | | | | | | | | | |
| 8th 7th | 2.80 | 20.96 | 1 | | | | | | | | | |
| 9th 8th | 3.82 | 23.00 | 1 | | | | | | | | | |
| 10th | | | | | | | | | | | | |
| 11th | | | | | | | | | | | | |
| 12th | | | | | | | | | | | | |

Shaft Horse Power at each turbine H.P. 550kw. I.P. Revolutions per minute, at full power, of each Turbine Shaft H.P. 8000 1st reduction wheel 1000

Motor Shaft diameter at journals H.P. 3" I.P. Pitch Circle Diameter 1st pinion 3.9367 1st reduction wheel 3.2624 Width of Face 1st reduction wheel 5 1/2 x 2

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings 1st pinion 10 1/4 1st reduction wheel 10 1/4

Flexible Pinion Shafts, diameter at bearings External Solid Internal 1st 3 1/2 2nd diameter at bottom of pinion teeth 1st 3.6451

Wheel Shafts, diameter at bearings 1st 5" diameter at wheel shroud, 1st 2-4" Generator Shaft, diameter at bearings 5" Propelling Motor Shaft, diameter at bearings

Intermediate Shafts, diameter as per rule as fitted Thrust Shaft, diameter at collars as per rule as fitted

Tube Shaft, diameter as per rule as fitted Screw Shaft, diameter as per rule as fitted Is the tube screw shaft fitted with a continuous liner

Bronze Liners, thickness in way of bushes as per rule as fitted Thickness between bushes as per rule as fitted Is the after end of the liner made watertight in the

propeller boss. If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner. If 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.

If 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 shaft. If so, state type. Length of Bearing in Stern Bush next to and supporting propeller.

Propeller, diameter. Pitch. No. of Bades. State whether Moveable. Total Developed Surface square feet. Single Screw, are arrangements made so that steam can be led direct to the L.P. Turbine. Can the H.P. or I.P. Turbines exhaust direct to the

condenser. No. of Turbines fitted with astern wheels. Feed Pumps No. and size. How driven. Pumps connected to the Main Bilge Line No. and size. How driven.

Ballast Pumps, No. and size. Lubricating Oil Pumps, including Spare Pump, No. and size. Gear Pump - one per set. Are two independent means arranged for circulating water through the Oil Cooler. Suctions, connected both to Main Bilge Pumps and Auxiliary

Bilge Pumps, No. and size:—In Engine and Boiler Room. In Pump Room. Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes. 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.

Are all Sea Connections fitted direct on the skin of the ship. Are they fitted with Valves or Cocks. Are they fixed sufficiently high on the ship's side to be seen without lifting the stokehold plates. Are the Overboard Discharges above or below the deep water line. Are they each fitted with a Discharge Valve always accessible on the plating of the vessel. Are the Blow Off Cocks fitted with a spigot and brass covering plate. What pipes pass through the bunkers. How are they protected. What pipes pass through the deep tanks. 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. 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. Is the Shaft Tunnel watertight. Is it fitted with a watertight door. worked from

BOILERS, &c.—(Letter for record.....) Total Heating Surface of Boilers.....

Is Forced Draft fitted..... No. and Description of Boilers..... Working Pressure.....

Is a Report on Main Boilers now forwarded?.....

Is { a Donkey } Boiler fitted?..... If so, is a report now forwarded?.....
{ an Auxiliary }

Is the donkey boiler intended to be used for domestic purposes only.....

Plans. Are approved plans forwarded herewith for Shafting..... Main Boilers..... Auxiliary Boilers..... Donkey Boilers.....
(If not, state date of approval)

Superheaters..... General Pumping Arrangements..... Oil Fuel Burning Arrangements.....

SPARE GEAR.

Has the spare gear required by the Rules been supplied. Yes. ✓

State the principal additional spare gear supplied. 1 Set of Turbine bearings including set of pads and cages for Michelle Thrust.

1 Set of governor worms & wormwheels - ditto for main oil pump and extraction pump.

1 Set of bearings & bushes for main governor and main oil pump.

1 Complete set of Springs including Bibby Coupling Springs

1 Set of bushes pads and cages for Michelle Thrust for worm spindle.

3 Controlling valves, spindles nuts seats and Spindle liners.

1 Set of shaft gland packings with springs - 1 Set diaphragm packing Springs - 1 Set of Gearbox bearings.

Spanners.

The foregoing is a correct description,

THE BRITISH THOMPSON-HOUSTON CO., LTD.

per H. Manning

Manufacture

Table with columns: Dates of Survey while building, During progress of work in shops, During erection on board vessel, Total No. of visits. Includes dates from 12.12.43 to 27.10.44 and a total of 29 visits.

Dates of Examination of principal parts—Casings 18.8.44 etc Rotors 18.4.44 etc Blading 31.5.44 etc Gearing 27.6.44 etc

Wheel shaft 27.6.44 etc Thrust shaft..... Intermediate shafts..... Tube shaft..... Screw shaft.....

Propeller..... Stern tube..... Engine and boiler seatings..... Engine holding down bolts.....

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

Main boiler safety valves adjusted..... Thickness of adjusting washers.....

Rotor shaft, Material and tensile strength. Forged Siemens Steel 43.4/43.8 tons/sq in etc. R2508 (F304 Lloyds S8676 W.H. E.C. 12.9.44. Identification Mark)

Flexible Pinion Shaft, Material and tensile strength..... R2509 (F305 Lloyds S.8677 W.H. E.C. 10.10.44. Identification Mark)

Pinion shaft, Material and tensile strength. Forged Nickel Steel 49.4/49.6 tons/sq in etc. R2508 (F275 Lloyds S8793 W.H. E.C. 12.9.44. Identification Mark)

1st Reduction Wheel Shaft, Material and tensile strength..... R2509 (F276 Lloyds S8794 W.H. E.C. 10.10.44. Identification Mark)

Wheel shaft, Material 43.8 - 44.4 tons etc. (F277 Lloyds S8506 W.H. E.C. 12.9.44. Identification Mark) Thrust shaft, Material..... Identification Mark

Intermediate shafts, Material..... Identification Marks..... Tube shaft, Material..... Identification Marks

Screw shaft, Material..... Identification Marks..... Steam Pipes, Material..... Test pressure.....

Date of test..... 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. No. ✓ If so, state name of vessel.....

General Remarks. (State quality of workmanship, opinions as to class, &c.) The Generator Sets have been constructed under Special Survey in accordance with the requirements of the Rules and approved plans. The steel used was made at works approved by the Committee the workmanship is good and on completion the sets were tested in the shop under full and overload conditions with satisfactory results. Afterwards working parts were opened out, examined and found in order, alignment was down gauges being checked. The generators have been despatched to Newcastle for fitting on board the vessel.

Table with columns: The amount of Entry Fee, Special, Donkey Boiler Fee, Travelling Expenses (if any), When applied for, When received. Includes handwritten amounts like £19.

E. Crossley, Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute..... Assigned Su F.E. machy. rph.

FRI. 6 JUL 1945

