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NEWCASTLE-ON-TYNE, No. 104096

Report on Steam Turbine Machinery.

No. 113924

Received at London Office

Date of writing Report 23.5.1946 When handed in at Local Office 13 JUN 1946 Port of London

No. in Survey held at Rugby Date, First Survey 4.10.44 Last Survey 17.5.1946

Reg. Book (Number of Visits 25)

on the TURBINE GEARED GENERATING SETS for TURBO-ELEC S.S. "HELICINA" Tons (Gross 12167 Net 7232)

Built at NEWCASTLE-ON-TYNE By whom built SWAN HUNTER & WIGHAM RICHARDSON Yard No. 1711 When built

Engines made at RUGBY By whom made MESSRS. B.T.H. CO. LTD. Engine No. R.2523 When made 1946

Boilers made at By whom made Boiler No. R.2524 When made

Shaft Horse Power at Full Power Owners MESSRS. ANGLO-SAXON PETROLEUM CO. LTD. Port belonging to

Norm. Horse Power as per Rule Is Refrigerating Machinery fitted for cargo purposes Is Electric Light fitted

Trade for which Vessel is intended OIL TANKER.

STEAM TURBINE ENGINES, &c.—Description of Engines TWO—SINGLE REDUCTION GEARED IMPULSE TURBINES

No. of Turbines Ahead ONE per SET Direct coupled, single reduction geared to EACH GENERATOR propelling shafts. No. of primary pinions to each set of reduction gearing ONE

Direct coupled to Alternating Current Generator phase periods per second rated 650 Kilowatts 220 Volts at 1000 revolutions per minute;

supplying power for driving Propelling Motors, Type

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

| | 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 | 4.7 | 14.56 | 14.76 | 2 | | | | | | | | |
| 2nd | 98 | 13.62 | 1 | | | | | | | | | |
| 3rd | 1.2 | 14.06 | 1 | | | | | | | | | |
| 4th | 1.47 | 14.6 | 1 | | | | | | | | | |
| 5th | 1.89 | 15.44 | 1 | | | | | | | | | |
| 6th | 1.71 | 18.78 | 1 | | | | | | | | | |
| 7th | 2.8 | 20.96 | 1 | | | | | | | | | |
| 8th | 3.82 | 23.0 | 1 | | | | | | | | | |
| 9th | | | | | | | | | | | | |
| 10th | | | | | | | | | | | | |
| 11th | | | | | | | | | | | | |
| 12th | | | | | | | | | | | | |

Shaft Horse Power at each turbine H.P. 550 kW. I.P. 8000 1st reduction wheel 1000 L.P. main shaft

Propeller Shaft diameter at journals H.P. 3" Pitch Circle Diameter 1st pinion 3.9367 1st reduction wheel 31.2624 Width of Face 1st reduction wheel 5 1/2" x 2 2nd pinion main wheel main wheel

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" 2nd pinion main wheel

Pinion Shafts, diameter at bearings 1st 3 1/2" 2nd diameter at bottom of pinion teeth 1st 3.6451" 2nd

Generator Shaft, diameter at bearings 5" Propelling Motor Shaft, diameter at bearings

Thrust Shaft, diameter at collar as per rule as fitted

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

Is the after end of the liner made watertight in the peller boss If the liner is in more than one length are the junctions made by fusion through the whole thickness of the liner

Is the space charged with a plastic material insoluble in water and non-corrosive Is an approved Oil Gland or other appliance fitted at the after end of the tube

Length of Bearing in Stern Bush next to and supporting propeller State whether Movable Total Developed Surface square feet.

Can the H.P. or I.P. Turbines exhaust direct to the Feed Pumps No. and size How driven

Lubricating Oil Pumps, including Spare Pump, No. and size ONE GEAR PUMP per SET. Suctions, connected both to Main Bilge Pumps and Auxiliary

In Pump Room. Water Circulating Pump Direct Bilge Suctions, No. and size Independent Power Pump Direct Suctions to the Engine Room

Are all the Bilge Suction pipes in Holds and Tunnel Well fitted with strum-boxes. 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.

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. 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

What pipes pass through the bunkers. How are they protected. Have they been tested as per rule. Pipes, Cocks, Valves and Pumps in connection with the machinery and all boiler mountings accessible at all times.

Is the Shaft Tunnel watertight. Is it fitted with a watertight door. worked from.

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Lloyd's Register Foundation

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.....
(If not, state date of approval)

Main Boilers.....

Auxiliary Boilers.....

Donkey Boilers.....

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 Michell Thrust*

1 set worms & wormwheels, 1 set of bearings and bushes for main governor and main oil pump.

1 complete set of springs including those required for Bibby coupling 1 set of pads & cages for Michell Thrust

on worm spindle. 3 steam controlling valves, spindles, nuts, seats & spindle liners.

1 set of shaft gland packing with springs. 1 set of diaphragm packing springs. 1 set of gearbox bearings

Spanners, wear down gauges.

THE BRITISH THOMSON-HOUSTON CO., LTD.

The foregoing is a correct description,

Dates of Survey while building { During progress of work in shops - - - 4.10.44; 14.21/8/45; 27.11.45; 6.14.18.20. 27/12/45; 1.8.18.8/1/46; 5.15.21.27/2/46;
During erection on board vessel - - - 5.15.19.21.27/3/46; 4.4.46; 3.17/5/46.
Total No. of visits. 25

Dates of Examination of principal parts { PORT M/C:- 18.12.45 & 3.1.46 PORT:- 5.3.46 PORT 4.1.46 PORT 23.11.45
STAR M/C:- 11.2.46 & 19.2.46 ROTORS GENERATORS Blading & ROTORS Gearing
STAR:- 30.11.45 STAR:- 18.12.45 STAR:- 27.11.45 & 19.3

Wheel shaft 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 Steel - 40 tons tensile.* Identification Mark *PORT M/C:- LLOYDS. S 9614. F432*

Flexible Pinion Shaft, Material and tensile strength *Forged Nickel.* Identification Mark *STAR M/C:- LLOYDS. S 9438. F433*

Pinion shaft, Material and tensile strength *Forged Nickel Steel. - 48 tons tensile.* Identification Mark *PORT M/C:- LLOYDS. S 9038. F436*

1st Reduction Wheel Shaft, Material and tensile strength *Forged Steel - 40 tons tensile.* Identification Mark *STAR M/C:- LLOYDS. S 3676. F250*

Wheel shaft, Material *SHROUD 40 tons Steel* Identification Mark *PORT M/C:- LLOYDS. S 586. F438*

Intermediate shafts, Material Identification Marks *STAR M/C:- LLOYDS. S 587. F439*

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 *Yes.* If so, state name of vessel *HMS. "OLNA"*

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 approved Works; the workmanship is good, and the sets have

been tested in the shops under full and overload conditions with satisfactory results. Subsequent

the machines were opened up for inspection, found in order, and after re-assembly have been

despatched to Newcastle-on-Tyne for fitting into this vessel.