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NEWCASTLE-ON-TYNE, No. 104096

# Report on Steam Turbine Machinery.

No. 113923

Date of writing Report 31.5.1946 When handed in at Local Office 13 JUN 1946 Port of London Received at London Office 13 JUN 1946 3 DEC 1946  
 No. in Survey held at Rugby Date, First Survey 15.8.44 Last Survey 1.2.1946  
 Reg. Book on the TURBO-ELEC S.S. "HELICINA" (Number of Visits 41)  
 Tons { Gross 12167 Net 7231/2  
 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. PORT-R.2525 When made 1946  
 Boilers made at By whom made Boiler No. STAR-R.2526 When made  
 Shaft Horse Power at Full Power 11,000 Owners ANGLO-SAXON PETROLEUM CO. LTD. Port belonging to  
 Nom. Horse Power as per Rule 13,000 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 TURBO-ELECTRIC

Ahead 2 Direct coupled, single reduction geared } to propelling shafts. No. of primary pinions to each set of reduction gearing  
 No. of Turbines 3  
 Direct coupled to { Alternating Current Generator 3 phase 65 periods per second } rated 4200 Kilowatts 3000 Volts at 3910 revolutions per minute;  
 or supplying power for driving ONE Propelling Motor, Type SYNCHRONOUS - DOUBLE UNIT.  
 rated 8400 Kilowatts 3000 Volts at 115 revolutions per minute. Direct coupled, single or double reduction geared to ONE propelling shaft.

T. P.				I. P.			L. P.			ASTERN.		
LOADING.				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	65"	3'-0.75"	12 ROW									
2nd	1.07"	3'-1.0"	1 WHEEL									
3rd	.86"	3'-3.78"	1									
4th	1.18"	3'-4.42"	1									
5th	1.55"	3'-5.16"	1									
6th	5.2 "	3'-7.26"	1									
7th	4.75"	3'-11.56"	1									
8th	7.46"	4'-4.88"	1									
9th												
10th												
11th												
12th												

Shaft Horse Power at each turbine H.P. 6500 ✓  
 I.P. 4150 1st reduction wheel  
 L.P. main shaft

Motor Shaft diameter at journals H.P. 5" ✓ Pitch Circle Diameter 1st pinion 1st reduction wheel  
 I.P. 2nd pinion main wheel  
 L.P. 7" ✓ Width of Face 1st reduction wheel main wheel

Distance between centres of pinion and wheel faces and the centre of the adjacent bearings 1st pinion 1st reduction wheel  
 2nd pinion main wheel

Pinion Shafts, diameter at bearings External 1st { 2nd { diameter at bottom of pinion teeth  
 Internal 1st { 2nd {

Generator Shaft, diameter at bearings 7" AND 7"  
 Propelling Motor Shaft, diameter at bearings 20" AND 20"

Thrust Shaft, diameter at collars as per rule as fitted

Is the { tube } shaft fitted with a continuous liner { screw }

Thickness between bushes as per rule as fitted Is the after end of the liner made watertight in the

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

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

Total Developed Surface square feet

Can the H.P. or I.P. Turbines exhaust direct to the

No. of Turbines fitted with astern wheels NONE Feed Pumps { No. and size How driven

No. and size Lubricating Oil Pumps, including Spare Pump, No. and size TWO ELECTRIC DRIVEN 120 GALS/MIN

Suctions, connected both to Main Bilge Pumps and Auxiliary

In Pump Room

In 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

ring plate What pipes pass through the bunkers How are they protected

Have they been tested as per rule

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

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

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

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

Is a Report on Main Boilers now forwarded?..... If so, is a report now forwarded?.....

Is { a Donkey } Boiler fitted?.....  
    { 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)..... Oil Fuel Burning Arrangements.....

Superheaters..... General Pumping 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, 2 studs & nuts of each size for rotor bearing, 1 complete set of turbine thrust pads, 1/20" of total number of bolts & nuts for each turbine casing joint, 1 set of shaft gland packings, 1 set of diaphragm gland packing springs, 1 escape valve spring of each size fitted, 1 set of worm & wormwheels for governor drive, 1 set of coupling bolts, 10% blading, spacers, & shrouding, 1 set of bleed tools, 1 oil cooler stack, 1 set of complete tools, 1 set of bearings for oil pump, 1 set of packing for oil pump gland.

THE BRITISH THOMSON-HOUSTON CO., LTD.

The foregoing is a correct description,

Dates of Survey while building { During progress of work in shops - - - 15.8.44; 4.22/9/44; 24.27.31/10/44; 29.12.44; 5.9.12.26/1/45; 1.6/2/45; 13.20/3/45; 5.24/4/45; 29.6.45; 5.17.27/7/45; 14/8/45; 16.18/9/45; 2.23/10/45; 9.20.27.29.30/11/45; 6.11.14/12/45; 18.20/1/46.  
During erection on board vessel - - - 25.29.31/1/46; 1/2/46.  
Total No. of visits..... **43**

Dates of Examination of principal parts—Casings..... PORT:- 4.9.45      PORT:- 10.8.45      PORT:- 10.8.45      Gearing.....  
STAR:- 6.12.45      STAR:- 12.1.46      STAR:- 12.1.45      Blading.....  
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.....

Flexible Pinion Shaft, Material and tensile strength..... Identification Mark.....

Pinion shaft, Material and tensile strength..... Identification Mark.....

**MAIN MOTOR**  
Reduction Wheel Shaft, Material and tensile strength..... **Forged steel - 35 tons tensile**..... Identification Mark.....

**ALTERNATOR**  
Wheel shaft, Material..... **Forged Steel - 40 tons**..... 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..... **YES**..... If so, state name of vessel..... **HMS. "OLNA"**.....

General Remarks. (State quality of workmanship, opinions as to class, &c.)..... **The turbines have been built under special**

**Survey in accordance with the Rules and approved plans. Forgings for the turbo-alternator**

**and propulsion motor have been made at approved works and found in order during construction**

**and fabrication of the Main Motor has been under Survey. On completion the turbo-alternator and**

**run at various speeds up to full & overspeed, the operation of the governors and trip gears noted**

**and all found satisfactory. The propulsion motor was run at normal speed and found**

**in order at no-load. Subsequently the turbines and all bearings were opened up,**

**examined, and found satisfactory.**

**This machinery is in our opinion eligible to have the notation LMC, when**

**satisfactorily installed in the vessel and proved satisfactory under working conditions.**

The amount of Entry Fee ... £ : : When applied for.....

Special ENCLOSURE T. £295: 0: 6 11 June 1946

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

Travelling Expenses (if any) £ : : 19.....

FRI 20 DEC 1946

Committee's Minute.....

Assigned..... **Sir F.E. Mchey opt.**



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