

Rpt. 4d.

No. 104096

REPORT ON ELECTRIC PROPELLING MACHINERY.

Received at London Office

3 DEC 1946

Date of writing Report 29<sup>th</sup> October 1946, When handed in at Local Office 26<sup>th</sup> Nov. 1946, Port of NEWCASTLE-ON-TYNE.

No. in Survey held at WALLSEND. Date, First Survey (1945) Nov. 14<sup>th</sup> 19 Last Survey 26<sup>th</sup> October 1946.

Reg. Book. Number of Visits 17

74931 Single on Twin Triple Quadruple } Screw vessel. "HELICINA." Tons { Gross 12167 Net 7232

Built at WALLSEND. By whom built SWAN HUNTER & WIGHAM RICHARDSON LTD. Yard No. 1711 When built 1946.

Electrical Machines made at Rugby. By whom made B.T.H. CO. LTD. Contract No. E 10171. Generator Nos. R. 197086, R. 197087. Motor Nos. STATOR. R. 195309, ROTOR. R. 195308. When made 1945.

Shaft Horse Power at Full Power 13,000 B.H.P. / attached 12.12.46 Total capacity of Generators 10,000 kilowatts

Nom. Horse Power as per Rule Owners ANGLO-SAXON PETROLEUM CO. LTD. Port belonging to LONDON.

Trade for which Vessel is intended CARRYING PETROLEUM IN BULK.

TEAM ENGINES.—Type of Engine  $\phi$  No. of Engines  $\phi$  Revs. per minute  $\phi$

Is a Governor fitted  $\phi$  Is the speed variation as per Rule when load is thrown off YES

Is an emergency Governor fitted  $\phi$  Is it arranged for hand tripping  $\phi$

Does it trip the throttle valve as per Rule  $\phi$  If exhaust steam is admitted, is an

automatic shut-off fitted  $\checkmark$  Is provision made for bleeding steam  $\phi$  and

Is a non-return or positive shut-off valve fitted  $\phi$

Torque Limiting.—If generator capacity exceeds motor rating, state means provided for limiting torque input to screw shaft. GENERATOR CAPACITY COMMENSURATE WITH MOTOR RATING.

Lubricating Oil.—State what means are provided for emergency supply  $\phi$

Is the emergency reserve sufficient to maintain lubrication as per Rule YES

Mechanical Balance.—Are the Engines and Generators balanced so as not to cause appreciable vibration  $\phi$

Report.—Has a separate report Rpt. 4a for the Engines been issued YES

DIESEL ENGINES.—Type of Engines — Revs. per minute —

Is a Governor fitted — Is the speed variation as per Rule when load is thrown off —

Is an Emergency Governor fitted — Does it operate as per Rule —

Rating.—Has each Engine been tested and found to be capable of developing 10 per cent. overload for one hour as per Rule —

Report.—Has a separate report Rpt. 4b for the Engines been issued —

GENERATORS.—Direct or Alternating Current  $\phi$  No. of Generators  $\phi$

Is alternating current state number of phases  $\phi$  frequency  $\phi$

Kilowatts per Generator  $\phi$  Voltage per Generator  $\phi$  Amperes per Generator  $\phi$

Do they comply with the requirements regarding insulation materials  $\phi$

Terminals  $\phi$ , coolers YES, thermometers  $\phi$

Ventilation YES, position in ship YES, temperature rise YES

Embedded temperature detectors  $\phi$  shaft currents YES

Ventilation.—State how this is arranged (open or closed system)  $\phi$

Is open system are ventilating arrangements satisfactory  $\phi$

Rating when Idle.—State what provision is made  $\phi$

Facilities for Inspection and Repair.—Are these as per Rule  $\phi$

Wear-down gauges supplied  $\phi$

Are the arrangements to prevent accumulation of bilge-water under the machines satisfactory YES.

NOTE.— WHERE INDICATED THUS  $\phi$  INFORMATION CONTAINED IN LONDON REPORT NO 113815



MOTORS.—S.H.P. per Motor at full power ☐ No. of Motors ☐  
Voltage per Motor ☐ Amperes per Motor ☐

Single or double unit ☐  
Do they comply with the requirements regarding insulation materials ☐  
terminals ☐ coolers ☒ thermometers ☐ ventilation ☐  
heating when idle ☒ shaft currents ☐ facilities for inspection and repair ☒  
mechanical protection ☒ lubrication ☐ position in ship ☒

A.C. Motors.—Are the laminations securely clamped around the whole of the periphery

and are they insulated from one another with approved material

Is provision made for machining the collector rings

Do the Motors remain in step under all normal conditions of running

D.C. Motors.—Are the brushes staggered as per Rule

If the system permits overspeeding at light loads are overspeed protection devices fitted

EXCITATION.—Is current for excitation taken from the ship's Auxiliary Generators

If so state voltage ☐ and excitation amperes at full power ☐ kilowatts for excitation ☐

State arrangements for excitation of Propulsion Generators

and Propelling Motors

If an alternative means of excitation is provided, state particulars **TWO MOTOR DRIVEN BOOSTER-EXCITER SETS FITTED.**

Do the Excitation Machines comply with the requirements regarding temperature rise at full power

and after manoeuvring as per Rule

D.C. Systems.—Are the arrangements for Motor and Generator excitation as per Rule

CONTROL.—Position of Main Control Panel

**FORWARD END OF ENGINE ROOM ON TURBO FLAT.**

Do the Control Panels comply with the requirements regarding position

distance from combustible material ☐ grouping of controls ☐

and instruments ☐ insulating materials (state what type is used) ☐

spacing and shielding of live parts ☐ accessibility of parts ☐

position of fuses ☐ proportioning of busbars ☐

locking of screws and nuts ☐ labelling ☐ fuses for voltmeters, etc. ☐

switches and circuit breakers ☒ fusible cutouts ☐

proportioning of levers, connecting links, etc. ☒ interlocking ☐

provision for manual operation of contactors, etc. (state method employed)

earthing of instrument cases above 250 volts to earth

provision of renewable arcing tips on switches subject to arcing

capability of withstanding shock and inclination

operation with high and low voltage

alignment of operating shafts

Overload and Short Circuit Protection.—State what means are provided

At what current or load is it set to operate

**2 AMPS.**

by hand when running at full power and found satisfactory

Earth Detection.—Is the main circuit provided with means for detecting earths

Are aural and visual alarms fitted ☐ Is main power interrupted by the occurrence of an earth fault ☐

If a limiting resistance is connected in the earth detecting circuit what is the ohmic value

What earth leakage current is necessary to operate the device

NOTE:—WHERE INDICATED THUS ☐ INFORMATION CONTAINED IN LONDON REPORT NO. 113815.

If a switch is used to disconnect the aural signal does it automatically switch on the visual alarm ☐

Are the excitation circuits provided with means for earth detection ☐

Mechanical Protection.—Are circuits above 250 volts to earth protected as per Rule ☒

Bridge or Deck Control.—Is bridge control provided ☒ If so, from how many stations ☐

Can they be operated freely without producing currents or loads in excess of the working capacity of the plant

and without reference to electrical instruments ☐ Is an emergency control provided in the engine room ☐

and can the transfer to this control be made quickly in the engine room

Can the emergency control be rendered mechanically independent of the bridge control

Instruments and Gauges.—State what Instruments are provided for each Generator

and for each Motor

and, for Steam Engines, what Gauges are provided

Is an Insulation Tester provided ☒

Discharge Protection.—Are all circuits protected as per Rule

D.C. Systems.—If the Generators are connected in series state what means are provided to prevent reversal of rotation

Are the Propulsion Generators also used alternatively for other purposes

If so, is provision made for overload protection, voltage adjustment, etc., as per Rule

Reversing Switches.—Are any provided ☒ If so, are they interlocked as per Rule ☒

Resistances.—Are shunt resistances for synchronous motor fields insulated as per Rule

Temperature Alarm.—Are machines with enclosed ventilating system, etc., fitted with temperature alarm

Auxiliary Power.—Are essential services protected from interruption due to overloading of non-essential circuits **GENERATOR CAPACITY SUFFICIENT TO PREVENT OVERLOADING.**

CONDUCTORS & CABLES.—Are all essential Conductors stranded as per Rule

Are the ends of Paper and Varnished Cambric Insulated Cables sealed

Are the ends of all Cables having a sectional area of 0.04 sq. in. and above provided with Cable sockets

Are all Cables carrying alternating current as per Rule ☒ Have all Cables been tested at the makers' works as per Rule ☒

**UNBRAIDED CABLES APPROVED.**

SECONDARY BATTERIES.—Are Batteries used for starting Main Propulsion Engines

If so, have full particulars been submitted and approved

working conditions and do they give the number of starts required by the Rules

Are they installed as per Rule ☐ Are the charging arrangements satisfactory ☐

SPARE GEAR.—If engaged on open sea service has a list of spare gear been submitted and approved

Is a list of the articles supplied attached to this report

Are they stored as per Rule

NOTE:—WHERE INDICATED THUS ☐ INFORMATION CONTAINED IN LONDON REPORT NO. 113815.

### ELECTRIC PROPULSION EQUIPMENT CONDUCTORS.

DESCRIPTION—MAIN GENERATORS.	CONDUCTORS.		TOTAL MAXIMUM CURRENT—AMPERES.		MAXIMUM VOLTAGE TO EARTH.	INSULATED WITH.	DI-ELECTRIC THICKNESS.	HOW PROTECTED.
	No. per Pole.	Nominal Area per Pole.	In Circuit.	Rule.				
MAIN GENERATORS	2	0.4	940	2x464	3180	V.C.	0.11	L.C.
GENERATOR FIELDS	1	0.1	166	191	256	V.C.	0.055	L.C.
NEUTRAL.	1	0.1	2	191	1830	V.C.	0.10	L.C.
MAIN MOTORS	2	0.4	940	2x464	3180	V.C.	0.11	L.C.
MOTOR FIELDS	1	0.1	182	191	2000	V.C.	0.10	L.C.
CONTROL CIRCUITS	ALL CABLES INSIDE CUBICLE.							
OTHER CIRCUITS:—								
PROPULSION MOTOR FANS.	1	0.0225	60	75	220	V.C.	0.035	L.C.
LUB. OIL PUMPS.	1	0.045	50	54	220	V.C.	0.035	L.C.
TURBINE GEAR MOTOR	1	0.03	88	84	110	V.C.	0.035	L.C.
AUX. TURBO. GENERATORS.	2	4"x1/4"	2500	—	220	BARE COPPER.		
AUX. TURBO. GEN. EQUALIZER.	1	4"x1/4"	—	—	220	BARE COPPER.		
EMERGENCY TRIP SWITCH.	1	0.0045	2	15	220	V.C.	0.035	L.C.



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All Conductors are of annealed copper, conforming to International Electrotechnical Commission Publication No. 28.

The Insulated Conductors have withstood the dielectric tests specified in the Rules.

The foregoing is a correct description,

THE BRITISH THOMSON-HOUSTON CO., LTD.

per H.R. Laming

Electrical Engineers.

Date

8<sup>th</sup> NOV 1946.

COMPASSES.—Are Single-Conductor circuits carrying continuous current arranged with lead and return Conductors fitted as close to one another as possible

Have tests been made during adjustment of the Compasses to determine the effect of switching the main circuits on and off. **YES**

The maximum deviation due to electric currents was found to be **NIL** degrees on **EVERY** course in the case of the

Standard Compass and **NIL** degrees on **EVERY** course in the case of the Steering Compass.

W. Buckie

Builders' Signature.

Date

12. 11. 46.

Dates of Survey while building  
During progress of work in shops -  
During erection on board vessel -  
Total No. of visits 17  
(1945) Nov. 14, 28 (1946) May 30, June 19, Aug. 12, 19, 30, Sept. 3, 4, 17, 23, 24, 27 Oct. 10, 23, 24.

Is this machinery duplicate of a previous case **YES** If so, state name of vessel **SS. "OLNA"**

General Remarks (State quality of workmanship, opinions as to class, &c.)

THE ELECTRIC PROPELLING MACHINERY HAS BEEN INSTALLED UNDER SPECIAL SURVEY IN ACCORDANCE WITH THE APPROVED PLANS, THE SECRETARY'S LETTERS AND THE REQUIREMENTS OF THE SOCIETY'S RULES.

THE MATERIALS USED ARE OF GOOD QUALITY AND THE WORKMANSHIP IS SATISFACTORY.

THE MACHINERY WAS TRIED UNDER WORKING CONDITIONS AT SEA AT POWERS UP TO 11,650 S.H.P. AND FOR A PERIOD OF ABOUT 6 MINUTES AT 14,000 S.H.P. WITH SATISFACTORY RESULTS AND IS ELIGIBLE, IN MY OPINION FOR THE NOTATION AS RECOMMENDED IN REPORT. 4a.

The amount of Entry Fee ... £

Travelling Expenses (if any) £

When applied for,

19.

When received,

19.

R. Stone

Surveyor to Lloyd's Register of Shipping.

FRI 20 DEC 1946

Committee's Minute

Assigned

See F.E. moly rpt



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