

# REPORT ON ELECTRIC PROPELLING MACHINERY.

Received at London Office 13 NOV 1946

Date of writing Report 4<sup>TH</sup> NOVEMBER 1946 When handed in at Local Office 5.11.46 Port of GLASGOW

No. in Survey held at PORT GLASGOW Date, First Survey 22<sup>ND</sup> JULY 1946 Last Survey 28<sup>TH</sup> SEPTEMBER 1946 Reg. Book.

Number of Visits 5

85864 on <sup>Single</sup> ~~From~~ <sup>Triple</sup> ~~Triple~~ <sup>Quadruple</sup> } Screw vessel BEAVERLAKE Tons { Gross 9824 Net 5818

Built at PORT GLASGOW By whom built MESSRS LITHGOWS LTD. Yard No. 1003 When built 1946

Electrical Machines made at HEATON By whom made C.A. PARSONS & CO. LTD. Contract No. 720 Generator Nos 2620 2623 Motor No. 2622 When made 1946

Shaft Horse Power at Full Power 9000 Total capacity of Generators 7400 kilowatts

Nom. Horse Power as per Rule 1500 Owners CANADIAN PACIFIC RAILWAY CO. Port belonging to LONDON.

Trade for which Vessel is intended LONDON - MONTREAL, FREIGHT.

## STEAM ENGINES.—Type of Engine No. 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 Is it arranged for hand tripping  
Does it trip the throttle valve as per Rule If exhaust steam is admitted, is an automatic shut-off fitted Is provision made for bleeding steam and is a non-return or positive shut-off valve fitted

Torque Limiting.—If generator capacity exceeds motor rating, state means provided for limiting torque input to screw shaft

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

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

Report.—Has a separate report Rpt. 4a for the Engines been issued FOR FULL PARTICULARS SEE NEWCASTLE REPORT

## OIL ENGINES.—Type of Engines No. of Engines Revs. per minute

Is a Governor fitted N° 103740 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 No. of Generators

If alternating current state number of phases frequency

Kilowatts per Generator Voltage per Generator Amperes per Generator

Do they comply with the requirements regarding insulation materials terminals, coolers, thermometers

lubrication, position in ship YES, temperature rise

embedded temperature detectors shaft currents

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

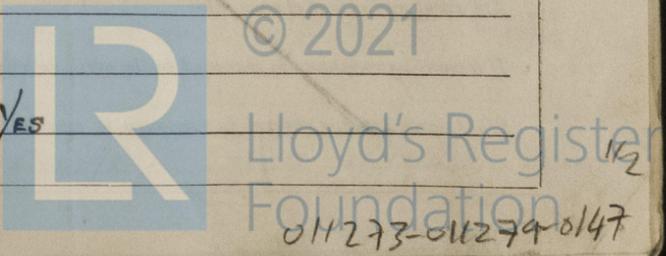
If open system are ventilating arrangements satisfactory

Heating when Idle.—State what provision is made

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

Are wear-down gauges supplied

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



**MOTORS.**—S.H.P. per Motor at full power \_\_\_\_\_ No. of Motors \_\_\_\_\_

Single or double unit \_\_\_\_\_ Voltage per Motor \_\_\_\_\_ Amperes per Motor \_\_\_\_\_

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. **YES**

**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 \_\_\_\_\_

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

and after manoeuvring as per Rule. **YES**

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

**CONTROL.**—Position of Main Control Panel. **IN ENGINE ROOM ADJACENT TO MAIN ALTERNATOR**

Do the Control Panels comply with the requirements regarding position. **YES**

distance from combustible material. **YES**, 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 \_\_\_\_\_ provision for maintaining \_\_\_\_\_

alignment of operating shafts \_\_\_\_\_ rust proofing of parts \_\_\_\_\_

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

At what current or load is it set to operate \_\_\_\_\_ Has it been tested by tripping \_\_\_\_\_

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 \_\_\_\_\_

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. **YES**

and for each Motor \_\_\_\_\_

and, for Steam Engines, what Gauges are provided \_\_\_\_\_

Is an Insulation Tester provided **YES**

**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. **YES**

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

Are the ends of Paper and Varnished Cambric Insulated Cables sealed. **YES**

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

Are all Cables carrying alternating current as per Rule **YES**

Have all Cables been tested at the makers' works as per Rule **YES**

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

If so, have full particulars been submitted and approved \_\_\_\_\_

Have they been tested under \_\_\_\_\_

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 **YES**

**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. or Phase.	Nominal Area per Pole.	In Circuit.	Rule.				
MAIN GENERATORS ALTERNATOR	4	3" x 1/2"	1400	✓	1732 A.C.	AIR	✓	COPPER BUS BARS SUPPORTED IN STEEL TRUNK
GENERATOR FIELDS OF ALTERNATOR	1	4	260	464	220	V.C.	1000V GRADE	L.C.
MAIN MOTORS (PER HALF UNIT)	2	3	700	720	1732 A.C.	V.C.	3000V GRADE	L.C.
MOTOR FIELDS (PER HALF UNIT)	1	15	210	246	700 A.C.	V.C.	1000V GRADE	L.C.
<b>CONTROL CIRCUITS:</b>								
AUXILIARY ALTERNATOR	1	2" x 1/4"	200	✓	665 A.C.	AIR	✓	COPPER BUS BARS SUPPORTED IN STEEL TRUNK
AUXILIARY ALTERNATOR FIELD	1	1	120	191	220	V.C.	1000V GRADE	L.C.
BOOSTER SUPPLY	1	1	130	191	220	V.C.	1000V GRADE	L.C.
BOOSTER GENERATOR	1	4	260	464	220	V.C.	1000V GRADE	L.C.
MAIN MOTOR VENT FAN	1	06	114.5	135	220	V.C.	1000V GRADE	L.C.
EXCITATION SUPPLY FROM	2	4	700	928	220	V.C.	1000V GRADE	L.C.

ALL PARTICULARS AS PER Messrs C.A. PARSONS DRAWING N° 64272

APPROVED 19/12/44

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,

Electrical Engineers.

Date

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

YES

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

ANY

course in the case of the

Standard Compass and NIL degrees on

ANY

course in the case of the Steering Compass.

LITHGOWS LIMITED,

A. A. White Secretary

Builders' Signature.

Date 4th November 1946

Dates of Survey while building

During progress of work in shops -

During erection on board vessel -

1946 - July 22nd, Aug. 9th, 30th, SEPTEMBER 20th, 26th, 28th.

Total No. of visits Six

Is this machinery duplicate of a previous case YES If so, state name of vessel

'BEAVER GLEN.'

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

The electrical propulsion equipment of this vessel has been fitted on board under Special Survey, tested under full working conditions and found satisfactory. The materials and workmanship are good.

It is eligible, in my opinion, for classification with the record \*LMC 10.46

Bo.

The Surveyors are requested not to write on or below the space for Committee's Minute.

The amount of Entry Fee ... £

CHARGED AT NEWCASTLE

When applied for,

19

Travelling Expenses (if any) £

When received,

19

J. M. Gardiner, Surveyor to Lloyd's Register of Shipping.

Committee's Minute

GLASGOW 12 NOV 1946

Assigned

1/1 LMC 10.46

Fitted for oil fuel 10.46 I.P. above 1500F



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