

Rpt. 4d.

REPORT ON ELECTRIC PROPELLING MACHINERY.

No. 103740

Date of writing Report 6th MAY 1946 When handed in at Local Office 18/5/46 Port of NEWCASTLE - ON - TYNE Received at London Office 7 JUN 1946No. in Survey held at Heaton Date, First Survey 12.5.44 Last Survey 3rd MAY 1946
Reg. Book.Single
on ~~Twin~~
~~Triple~~
~~Quadruple~~ } Screw vessel
Built at Port Glasgow By whom built Lithgows, Ltd. Yard No. 1008 When built 1946
"BEAVERLAKE"Tons { Gross 9824
Net 5818Electrical Machines made at Heaton By whom made G. A. Parsons & Co. Ltd. Contract No. 720
Generator No. 2630
Motor No. 2622 When made 1946Shaft Horse Power at Full Power 9000 ✓ Total capacity of Generators _____ kilowattsNom. Horse Power as per Rule 1500 Owners Canadian Pacific Railway Co. Port belonging to London
Trade for which Vessel is intended London - Montreal FreightSTEAM ENGINES.—Type of Engine high pressure steam turbine No. of Engines One Revs. per minute 3450Is a Governor fitted yes Is the speed variation as per Rule when load is thrown off _____Is an emergency Governor fitted yes Is it arranged for hand tripping yesDoes it trip the throttle valve as per Rule yes If exhaust steam is admitted, is an automatic shut-off fitted _____Is provision made for bleeding steam yes and is a non-return or positive shut-off valve fitted to be provided by BritishTorque Limiting.—If generator capacity exceeds motor rating, state means provided for limiting torque input to screw shaft When operating on half motor travel of governor valve limited by interlocked stop on control console.Lubricating Oil.—State what means are provided for emergency supply Gravity tank

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

Mechanical Balance.—Are the Engines and Generators balanced so as not to cause appreciable vibration yesReport.—Has a separate report Rpt. 4a for the Engines been issued yes

OIL 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 Alternating Current No. of Generators 1 - main
1 - AuxiliaryIf alternating current state number of phases Three main - 7000 frequency 57.6
Auxiliary - 400 main - 3000 frequency 22Kilowatts per Generator main - 7000 Voltage per Generator main - 3000 Amperes per Generator main - 1347
Auxiliary - 400 Auxiliary - 1150 Auxiliary - 261Do they comply with the requirements regarding insulation materials yesterminals yes, coolers yes, thermometers yes (on bearings only)lubrication yes, position in ship _____, temperature rise yesembedded temperature detectors yes shaft currents yesVentilation.—State how this is arranged (open or closed system) main - closed system; Auxiliary - open systemIf open system are ventilating arrangements satisfactory yesHeating when Idle.—State what provision is made for main alternator only: - Two 1/2 kw. electric heaters each end in winding compartmentFacilities for Inspection and Repair.—Are these as per Rule yesAre wear-down gauges supplied yes

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

MOTORS.—S.H.P. per Motor at full power 9000

Single or double unit Double

Voltage per Motor 3000

No. of Motors One

Amperes per Motor 2 x 674

Do they comply with the requirements regarding insulation materials Yes

terminals Yes

coolers Yes

thermometers Yes (on bearings)

ventilation Yes

heating when idle Yes (hot air from motor)

shaft currents Yes

facilities for inspection and repair Yes

mechanical protection Yes

lubrication Yes

position in ship Yes

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

and are they insulated from one another with approved material Yes

Is provision made for machining the collector rings Yes

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

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

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

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

If so state voltage 220

and excitation amperes at full power 524

kilowatts for excitation 115

State arrangements for excitation of Propulsion Generators Main (starting point) direct from 220 v. main with negative booster, no current in series. With motor synchronous negative booster excited to give normal 110 v. at ship-rings. Aux. generator similar but with main field rheostat (in series)

and Propelling Motors Direct from 220 v. main

If an alternative means of excitation is provided, state particulars Duplicate boosters and auxiliary supply from three 220 v. D.C. generators

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

and after manoeuvring as per Rule Approximate test made - to be checked on ship.

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

CONTROL.—Position of Main Control Panel Yes

Do the Control Panels comply with the requirements regarding position Yes

distance from combustible material Yes

grouping of controls Yes

and instruments Yes

insulating materials (state what type is used) Yes "Micanite"

spacing and shielding of live parts Yes

accessibility of parts Yes

position of fuses Yes

proportioning of busbars Yes

locking of screws and nuts Yes

labelling Yes

fuses for voltmeters, etc. Yes

switches and circuit breakers Yes

fusible cutouts Yes

proportioning of levers, connecting links, etc. Yes

interlocking Yes

provision for manual operation of contactors, etc. (state method employed) Yes contactors fitted - gear operated manually.

earthing of instrument cases above 250 volts to earth Yes fitted

provision of renewable arcing tips on switches subject to arcing Yes

capability of withstanding shock and inclination Yes

operation with high and low voltage Yes

provision for maintaining

alignment of operating shafts Yes "Oldham" couplings fitted

rust proofing of parts Yes

Overload and Short Circuit Protection.—State what means are provided 3-phase instantaneous overcurrent relays

At what current or load is it set to operate Main - 4000 A Auxiliary - 2000 A.

Has it been tested by tripping

by hand when running at full power and found satisfactory Yes - to be checked on ship.

Earth Detection.—Is the main circuit provided with means for detecting earths Yes. Circuit carried through high impedance transformer

Are aural and visual alarms fitted Yes

Is main power interrupted by the occurrence of an earth fault Yes

If a limiting resistance is connected in the earth detecting circuit what is the ohmic value Main 3400 ohms impedance Aux. 3300 ohms impedance
30 ohms impedance corresponding to 730 v. across transfr., aux. 10 ohms impedance and 0.05 amp. max. current flowing.
What earth leakage current is necessary to operate the device Minimum 0.5 amp. current in any winding of transfr. to trip relays.
Main at 0.014 A. with 73.6 v. across transfr. at 57.5 v. supply, corresponding to relay setting of 0.2 A.
Aux. " 0.037 A. " 30.2 v. " " 22 " " "

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

Are the excitation circuits provided with means for earth detection Yes by auxiliary D.C. panel

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

Bridge or Deck Control.—Is bridge control provided Yes

If so, from how many stations Yes

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

and without reference to electrical instruments Yes

Is an emergency control provided in the engine room Yes

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

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

Instruments and Gauges.—State what Instruments are provided for each Generator (Common with main motor) - A.C. volts & amperes, S.H.P.,
excitation volts & amperes, revolution counter, dual revolution indicator, thermocouple instrument
and for each Motor See above

and, for Steam Engines, what Gauges are provided None on engine. Steam gauges etc. provided on
separate panel

Is an Insulation Tester provided Yes

Discharge Protection.—Are all circuits protected as per Rule Yes

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

Are the Propulsion Generators also used alternatively for other purposes Yes

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

Reversing Switches.—Are any provided Yes

If so, are they interlocked as per Rule Yes

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

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

Auxiliary Power.—Are essential services protected from interruption due to overloading of non-essential circuits Yes (to be arranged on auxiliary
D.C. panel.

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

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 Yes

If so, have full particulars been submitted and approved Yes

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

Have they been tested under

Are they installed as per Rule Yes

Are the charging arrangements satisfactory Yes

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

Is a list of the articles supplied attached to this report Yes

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.	Nominal Area per Pole.	In Circuit.	Rule.				
MAIN GENERATORS								
GENERATOR FIELDS								
MAIN MOTORS								
MOTOR FIELDS								
CONTROL CIRCUITS								
OTHER CIRCUITS:—								

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,

L. B. Horsley
for C. A. Parsons & Co. Ltd

Electrical Engineers.

Date *17th May 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

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

Standard Compass and _____ degrees on _____ course in the case of the Steering Compass.

Builders' Signature.

Date

Dates of Survey while building
During progress of work in shops
(1944) May 12, June 21, Aug 10, Sept. 8, 12, Oct. 6, 18, 19, Nov. 1, 17, 22, Dec. 5 (1945) Jan. 3, 9, 17 Feb. 8
Feb. 22, Mar. 7, 15, Apr. 10, 19, 26, May 10, June 1, 12, 19, 20, 21, July 2, 3, 5, 20, Aug. 8, 9, 10, 21, Sept. 13,
18, Oct. 5, 10, Nov. 3, Dec. 13, 14, 15, 17, 19, (1946) Jan. 3, Feb. 20, Mar. 20, Apr. 8, 9, 10, 19, May 3
During erection on board vessel - -
Total No. of visits *55*

Is this machinery duplicate of a previous case *Yes* If so, state name of vessel *S.S. "BEAVERDELL"*

General Remarks (State quality of workmanship, opinions as to class, &c. THE MAIN AND AUXILIARY ALTERNATORS, THE PROPULSION MOTOR, THE CONTROL GEAR AND THE NEGATIVE BOOSTER SETS HAVE BEEN BUILT UNDER SPECIAL SURVEY IN ACCORDANCE WITH THE APPROVED PLANS AND WITH THE SECRETARY'S LETTERS. THE MATERIALS USED ARE OF GOOD QUALITY AND THE WORKMANSHIP IS GOOD. THE MACHINES AND CONTROL GEAR HAVE BEEN TESTED AT THE MAKERS' WORKS AS FAR AS PRACTICABLE AND THE TEST RESULTS INDICATE THAT THE REQUIREMENTS RELATING TO TEMPERATURE RISE AND OPERATING CHARACTERISTICS WILL BE MET UNDER WORKING CONDITIONS. HIGH VOLTAGE (DIELECTRIC) AND INSULATION RESISTANCE TESTS HAVE BEEN APPLIED AND FOUND SATISFACTORY.

THE MACHINERY HAS BEEN DESPATCHED TO *Greenock* GLASGOW FOR INSTALLATION IN THE SHIP AND ON THE COMPLETION THEREOF AND AFTER SATISFACTORY SHIP TRIALS, WILL, IN OUR OPINION, BE ELIGIBLE FOR THE NOTATION *✠* L.M.C. (WITH DATE).

The amount of Entry Fee *Sum. 110 : 0 : 0* When applied for, *3 JUN 1946*
Travelling Expenses (if any) £ : : When received, _____

Committee's Minute

Assigned

GLASGOW 12 NOV 1946

SEE ACCOMPANYING MACHINERY REPORT

Saninson & R. P. Storie

Surveyor to Lloyd's Register of Shipping.



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