

Rpt. 4d.

# REPORT ON ELECTRIC PROPELLING MACHINERY.

No. 21022

Received at London Office 10 SEP 1947

Date of writing Report 25<sup>th</sup> AUGUST 1947 When handed in at Local Office G.S. 10 4) Port of GLASGOW.

No. in Survey held at Glasgow Reg. Book. Date, First Survey 4.6. 194) Last Survey 12<sup>th</sup> August 1947.

25895 on <sup>Single</sup> ~~Triple~~ ~~Quadruple~~ Screw vessel "BEAVERCOVE" Number of Visits 9

Built at Glasgow By whom built Messrs FAIRFIELD LTD. Yard No. 728 When built 1947

Electrical Machines made at Heaton By whom made C.A. Parsons & Co. Ltd. Contract No. Generator No. M. 2693 A 2695 Motor No. 2694 When made 1947

Shaft Horse Power at Full Power 9,000 Total capacity of Generators 7,400 kilowatts

Nom. Horse Power as per Rule 1,500 Owners Canadian Pacific Railway Co., Ltd. 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  
automatic shut-off fitted Is provision made for bleeding steam If exhaust steam is admitted, is an  
is a non-return or positive shut-off valve fitted and

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 NO 104293

## 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

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

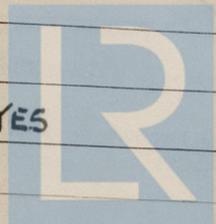
lubrication, position in ship YES, temperature rise  
embedded temperature detectors shaft currents

Ventilation.—State how this is arranged (open or closed system)  
open system are ventilating arrangements satisfactory

Heating when Idle.—State what provision is made

Facilities for Inspection and Repair.—Are these as per Rule  
wear-down gauges supplied

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



© 2021 Lloyd's Register Foundation

**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 \_\_\_\_\_ **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 \_\_\_\_\_  
 and excitation amperes at full power \_\_\_\_\_ kilowatts for excitation \_\_\_\_\_

If so state voltage \_\_\_\_\_  
 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 maneuvering 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 voltmeter, 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 \_\_\_\_\_, provision for maintain \_\_\_\_\_

operation with high and low voltage \_\_\_\_\_, rust proofing of parts \_\_\_\_\_

alignment of operating shafts \_\_\_\_\_  
**Overload and Short Circuit Protection.**—State what means are provided \_\_\_\_\_

At what current or load is it set to operate \_\_\_\_\_  
 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 alarm 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 \_\_\_\_\_

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

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 \_\_\_\_\_ **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 or Phase	Nominal Area per Pole.	In Circuit.	Rule.				
MAIN GENERATORS Alternator	4	3" x 1/4"	1400	—	1732 AC	AIR	—	Copper bus-bars supported in steel trunk
GENERATOR FIELDS of Alternator	1	0.4	260	464	220	V.C.	1000V GRADE	L.C.
MAIN MOTORS (per Half Unit)	2	0.3	700	770	1732 AC	V.C.	3000V "	L.C.
MOTOR FIELDS (per Half Unit)	1	0.15	210	246	700 AC	V.C.	1000V "	L.C.
CONTROL CIRCUITS								
OTHER CIRCUITS:—								
Auxiliary Alternator	1	2" x 1/4"	200	—	665 AC	AIR	—	Copper bus-bars supported in steel trunk
Auxiliary Alternator Field	1	0.1	120	191	220	V.C.	1000V GRADE	L.C.
Booster Supply	1	0.1	150	191	220	V.C.	1000V "	L.C.
Booster Generator	1	0.4	260	464	220	V.C.	1000V "	L.C.
Main Motor Vent Fan	1	0.06	114.5	135	220	V.C.	1000V "	L.C.
Excitation Supply from Aux. Generators	2	0.4	700	928	220	V.C.	1000V "	L.C.

All particulars as per Messrs C.A. Parson's Drawing No 64272. Approved 19/12/44.

© 1921

Lloyd's Register Foundation

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 4/9/47

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.



Builders' Signature.

Date 4/9/47

Dates of Survey while building: During progress of work in shops - ; During erection on board vessel - 4th, 12th, 17th, 20th, 22nd & 30th June, 31st July, 7th & 12th August, 1947. Total No. of visits 9

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

General Remarks (State quality of workmanship, opinions as to class, &c.) The electrical propulsion machinery of this vessel has been installed 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 of \* LMC 8.47.

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) £ NEWCASTLE When received, 19...

B. Haffner, Surveyor to Lloyd's Register of Shipping.

Committee's Minute GLASGOW 19 SEP 1947 Assigned SEE ACCOMPANYING MACHINERY REPORT

