

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Date of writing Report 25th August 47 When handed in at Local Office Glasgow Received at London Office 170 SEP 1947

No. in Survey held at Glasgow Port of GLASGOW
Reg. Book. Date, First Survey 4.6.47 Last Survey 12th August 1947

85895 on the "BEAVERCOVE" (Number of Visits 7) Tons { Gross 9824
Net 5818

Built at Glasgow By whom built Messrs Fairfield Co., Ltd. Yard No. 728 When built 1946

Owners Canadian Pacific Railway Co Port belonging to London.

Electrical Installation fitted by Messrs Fairfield Co., Ltd. Contract No. 728 When fitted 1947

Is vessel fitted for carrying Petroleum in bulk No. Is vessel equipped with D.F. Yes E.S.D. Yes Gy.C. Yes Radar Yes

Have plans been submitted and approved Yes System of Distribution Two-wire Voltage of supply for Lighting 220

Heating 220 Power 220 Direct or Alternating Current, Lighting D.C. Power D.C. If Alternating Current state periodicity — Prime Movers, —

has the governing been tested and found as per Rule when full load is suddenly thrown on and off Yes Are turbine emergency governors fitted with a trip switch as per Rule — Generators, are they compound wound Yes, are they level compounded under working conditions Yes, if not compound wound state distance between generators — and from switchboard — Where more than one generator is fitted are they arranged to run in parallel Yes, are shunt field regulators provided Yes Is the compound winding connected to the negative or positive pole Negative

Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing Yes Have certificates of test for machines under 100 kw. been supplied Yes and the results found as per rule Yes Are the lubricating arrangements and the construction of the generators as per rule Yes Position of Generators 400kw Generators: in Engine Room. 10kw Generator: Boat Deck, port side. is the ventilation in way of generators satisfactory Yes are they clear of inflammable material Yes, if situated near unprotected combustible material state distance from same horizontally — and vertically —, are the generators protected from mechanical injury and damage from water, steam and oil Yes, are the bedplates and frames earthed Yes and the prime movers and generators in metallic contact Yes Switchboards, where are main switchboards placed Switchboard Room, starboard side, after end of Machinery Space

are they in accessible positions, free from inflammable gases and acid fumes Yes, are they protected from mechanical injury and damage from water, steam and oil Yes, if situated near unprotected combustible material state distance from same horizontally — and vertically —, what insulation material is used for the panels "Sindanyo", if of synthetic insulating material is it an Approved Type Yes, if of semi-insulating material (slate or marble) are all conducting parts insulated therefrom as per Rule — Is the frame effectually earthed Yes

Is the construction as per Rule Yes, including accessibility of parts Yes, absence of fuses on the back of the board Yes, individual fuses to pilot and earth lamps, voltmeters, etc., Yes locking of screws and nuts Yes, labelling of apparatus and fuses Yes, fuses on the "dead" side of switches Yes Description of Main Switchgear for each generator and arrangement of equaliser switches 400kw Generators fitted with 2,000 amp triple pole circuit-breaker, (Negative & equaliser poles hand operated and interlocked with electrically-operated positive pole), with overload reverse current and preference trips. 10 kw Generator fitted with 50 Amp D.P. switch and fuses and 50 Amp. contactor interlocked with main circuit-breakers

and for each outgoing circuit Circuits above 250 Amps - DP. Circuit-breakers fitted with overload trips
Other circuits - DP. Knife switches with HRC. type fuses.

Are compartments containing switchboards composed of fire-resisting material or lined as per Rule Yes Instruments on main switchboard 13 ammeters 3 voltmeters — synchronising devices. For compound machines in parallel is the ammeter connected on the pole opposite to the equaliser connection Yes Earth Testing, state means provided Earth Lamps

Switches, Circuit Breakers and Fuses, are they as per Rule Yes, are the fuses an approved type Yes, are all fuses labelled as per Rule Yes If circuit breakers are provided for the generators, at what overload current did they open when tested Full load, are the reversed current protection devices connected on the pole opposite to the equaliser connection Yes, have they been tested under working conditions, and at what current did they operate 100% - 150% of Full load Joint Boxes, Section Boards and Distribution Boards, is the construction and position as per Rule Yes

Cables, are they insulated and protected as per the appropriate Tables of the Rules Yes, if otherwise than as per Rule are they of an approved type N.E., state maximum fall of pressure between bus bars and any point under maximum load 7 Volts, are the ends of all cables having a sectional area of 0.04 square inch and above provided with soldering sockets Yes Are paper insulated and varnished cambric insulated cables sealed at the ends Yes



with insulating compound. — or waterproof insulating tape. **Yes**. Are all the cable runs in accessible positions, not exposed to drip or accumulation of water or oil, high temperatures or risk of mechanical damage. **Yes**, are cables laid under machines or floorplates. —, if so, are they adequately protected. —. Are cables in machinery spaces, galleys, laundries, etc., lead covered. **Yes** or run in conduit. **Yes**. State how the cables are supported and protected. **Mains: L.C. cables clipped to steel channel**

Machinery Spaces: L.C. cables clipped to steel tray.
Accommodation: L.C. cables clipped to woodwork

Are all lead sheaths, armouring and conduits effectually bonded and earthed. **Yes**. Refrigerated chambers, are the cables and fittings as per Rule. **Yes**

Are all cables passing through decks and watertight bulkheads provided with deck tubes or watertight glands. **Yes**, where unarmoured cables pass through beams, etc., are the holes effectually bushed. **Yes** and with what material. **Lead or fibre** Alternative Lighting, are the groups of lights in the engine and boiler rooms arranged as per Rule. **Yes** Emergency Supply, state position. **Battery supply fitted**

in compartment in Engine Room and method of control. **Automatic electrically operated relay.**

Navigation Lamps, are they separately wired. **Yes** controlled by separate double pole switches. **Yes** and fuses. **Yes** Are the switches and fuses in a position accessible only to the officers on watch. **Yes**, is an automatic indicator fitted. **Yes** Secondary Batteries, are they constructed and fitted as per Rule. **Yes**, are they adequately ventilated. **Yes**

what is the battery capacity in ampere hours. **50AH at 10-hour rate**

Fittings, are all fittings on weather decks, in stokeholds and engine rooms and wherever exposed to drip or condensed moisture, weatherproof. **Yes** Are fittings installed where readily combustible materials or inflammable or explosive dust or gases are likely to be present. **No**, if so, how are they protected. —

and where are the controlling switches fitted. —, are all fittings suitably ventilated. **Yes**, are all fittings and accessories constructed and installed as per Rule. **Yes** Searchlight Lamps, No. of —, whether fixed or portable. —

are their fittings as per Rule. — Heating and Cooking, is the general construction as per Rule. **Yes**, are the frames effectually earthed. **Yes**, are heaters in the accommodation of the convection type. **Yes** Motors, are all motors constructed and installed as per Rule. **Yes** and placed in well-ventilated compartments in which inflammable gases cannot accumulate and free from damage from water, steam and oil. **Yes**, if situated near unprotected combustible material state minimum distance from same horizontally. — and vertically. — Are

motors coupled to oil fuel transfer and unit pressure pumps capable of being stopped from a position accessible in the event of fire in the pump compartment. **Yes**

Have motors of 100 BHP and over been inspected by the Surveyors during manufacture and testing. **Yes** Have certificates of test for motors under 100 BHP intended for essential services been supplied and the results found as per Rule. **Yes** Control Gear and Resistances, are they constructed and fitted as per Rule. **Yes** Lightning Conductors, where required are they fitted as per Rule. — Ships carrying Oil having a Flash Point

less than 150° F. Have all the special requirements of the Rules for such ships been complied with. —, are all fuses of the cartridge type. — are they of an approved type. — Are the fittings for pump rooms, between deck spaces, etc., in accordance with the special requirements for such ships. — Are the cables lead covered as per Rule. — Spare Gear, if the vessel is for open sea service have spares been provided as per Rule. **Yes**, are they suitably stored in dry situations. **Yes** Insulation Tests, has the insulation resistance of all circuits and apparatus been tested and found satisfactory. **Yes**

PARTICULARS OF GENERATING PLANT.

DESCRIPTION OF GENERATOR	No. of Parallel Poles	RATED AT			DRIVEN BY			Flash Point of Fuel
		Kilowatts	Volts	Ampères	Rev. per Min.	Kind	Use	
MAIN	3	400	225	1780	300	Diesel Engine	Diesel Oil	Above 150° F
AUXILIARY	1	10	220	455	1000	do	do	do
EMERGENCY								
ROTARY TRANSFORMER								

GENERATOR CABLES.

DESCRIPTION	KILOWATTS	CONDUCTORS		MAXIMUM CURRENT IN AMPERES		APPROX. LENGTH (lead plus return feet)	INSULATED WITH	HOW PROTECTED
		No. in Parallel Per Pole	Sectional Area or No. and Dia. of Strands Sq. ins. or sq. mm.	In the Circuit	Rule			
MAIN GENERATOR	400	2	12 1/2 / 103	1780	1864	102	V.C.	L.C.
" EQUALISER		1	12 1/2 / 103		932	51	"	"
Auxiliary Generator	10	1	19 / 064	45.5	135	300	"	"
EMERGENCY GENERATOR								
ROTARY TRANSFORMER: MOTOR								
" GENERATOR								

MAIN DISTRIBUTION CABLES.

DESCRIPTION	CONDUCTORS		MAXIMUM CURRENT IN AMPERES		APPROX. LENGTH (lead plus return feet)	INSULATED WITH	HOW PROTECTED
	No. in Parallel Per Pole	Sectional Area or No. and Dia. of Strands Sq. ins. or sq. mm.	In the Circuit	Rule			
AUX. SWITCHBOARDS AND SECTION BOARDS ...							
Wireless Navigation & Gyro Section	1	19 / 083	106	191	404	V.C.	L.C.
Midship Aft Lighting Section	1	19 / 064	33.6	135	184	"	"
" Forward "	1	19 / 064	34.5	135	156	"	"
Galley & Pantry Section	1	19 / 083	129	191	135	"	"
E.R. Aux. Stbd. Aft	1	19 / 064	113	135	1/4	"	"
" Port	1	19 / 064	86	135	212	"	"
Extraction Pump Section	1	19 / 064	111	135	280	"	"
Boiler Room Aux. "	1	19 / 064	86	135	212	"	"
E.R. Lighting "	1	19 / 064	91	135	90	"	"
Refrigerator Pump "	1	3 1/2 / 083	248	296	216	"	"
Forward Ring Main (Winches)	2	3 1/2 / 0 1/2	418	442	842	"	"
Midship " " "	2	3 1/2 / 0 1/2	300	492	568	"	"
Aft " " "	2	3 1/2 / 0 1/2	300	492	384	"	"

LIGHTING AND HEATING, ETC., CABLES.

WIRELESS	1	1/064	85	46	46	V.I.R.	L.C.
NAVIGATION LIGHTS	1	1/044	11	42	100	"	"
LIGHTING AND HEATING							
Pantry D.B.	1	19/064	1/2	135	96	V.C.	L.C.
Hospital D.B.	1	1/044	19	31	188	V.I.R.	"
Aft Cargo D.B.	1	19/064	22.4	135	408	V.C.	"
Ford " "	1	19/064	1/5	135	568	"	"
Refrig. Machinery Space Ltg. D.B.	1	1/029	4	15	248	"	"
Propulsion Equipment Heater "	1	1/044	30	42	60	"	"
Refrig. Cooler Fans Forward	1	19/083	199	191	202	"	"
" " " Aft. No 1	1	19/064	101	135	24	"	"
" " " Aft. No 2	1	19/064	39	135	388	"	"
Gyro Compass " "	1	1/029	10	15	58	V.I.R.	"
Radar	1	1/064	26	46	100	"	"

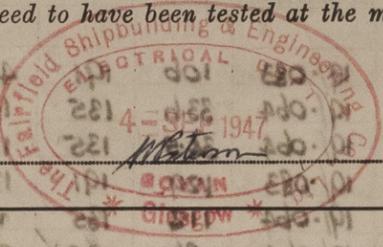
MOTOR CABLES.

ALL IMPORTANT MOTORS TO BE ENUMERATED	No.	B.H.P.	CONDUCTORS		MAXIMUM CURRENT IN AMPERES		APPROX. LENGTH (lead plus return feet)	INSULATED WITH	HOW PROTECTED
			No. in Parallel Per Pole	Sectional Area or No. and Dia. of Strands Sq. ins. or sq. mm.	In the Circuit	Rule			
Windlass	1	53	1	3 1/2 / 0 1/2	203	246	104	V.C.	L.C.
Steering Gear	2	38	1	19/064	132	135	680	"	"
Main Circulating Pumps	2	55	1	2 1/2 / 0 1/2	212	246	204	"	"
F.D. Fan	1	44	1	19/083	166	191	232	"	"
I.D. Fan	1	44	1	19/083	166	191	232	"	"
General Service Pumps	3	36	1	19/083	146	191	120	"	"
Forced Lub. Oil "	2	18	1	19/044	40	42	248	"	"
Oil Fuel Transfer Pump	1	16	1	1/064	63	45	148	"	"
Extraction Pumps	2	13.5	1	1/064	54	45	30	"	"
Air Compressor	1	11	1	1/064	44	46	24	V.I.R.	"
Fresh Water Pump	1	10	1	1/064	40	46	104	"	"
Turning Gear	1	10	1	1/064	40	46	132	"	"
E.R. Vent Fan	1	5.45	1	1/044	24	31	180	"	"
Generator Cooling Pump	1	4.25	1	1/044	14	31	92	"	"
Aux. Feed Pumps	2	4.0	1	1/044	14	31	150	"	"
Oil burning Gear	2	3.25	1	1/029	14	15	68	"	"
Boiler Room Vent Fan	1	3.25	1	1/044	14	15	48	"	"
Preheater Turning Motor	1	2.5	1	1/029	11	15	160	"	"
Aux. Boiler F.D. Fan	1	2	1	1/029	9	15	150	"	"
Propulsion Motor Vent. Fan	1	30	1	19/064	114	135	234	V.C.	"
Refrig. Compressors	2	140	2	3 1/2 / 083	528	592	124	"	"
Brine Pumps	4	9	1	1/064	36	46	160	V.I.R.	"
Refrig. Circulating Pump	1	12	1	1/064	48	45	152	V.C.	"
Refrig. Cooler Fans	4	2.85	1	1/044	12.3	31	184	V.I.R.	"
" " "	4	1.8	1	1/044	9.5	31	120	"	"
" " "	4	1.6	1	1/044	8.1	31	86	"	"
" " "	4	1.6	1	1/044	4.2	31	100	"	"
Winches	19	35	1	19/064	140	151	180	V.C.	"
"	2	42	1	19/083	148	225	96	"	"

The Electrical Equipment is installed in accordance with the approved plans and the requirements of the Rules.

All Insulated Conductors are guaranteed to have been tested at the maker's works as specified in the Rules.

The foregoing is a correct description.



Electrical Engineers.

Date 1/9/47

COMPASSES.

Minimum distance between electric generators or motors and standard compass 23 feet

Minimum distance between electric generators or motors and steering compass 21 feet

The nearest cables to the compasses are as follows:-

A cable carrying 17 Ampères 9 feet from standard compass 7 feet from steering compass.

A cable carrying 0.137 Ampères led into feet from standard compass led into feet from steering compass.

A cable carrying Ampères feet from standard compass feet from steering compass.

Have the compasses been adjusted with and without the electric installation at work at full power Yes

Has the effect of switching on and off circuits, motors and other electro-magnetic apparatus within the vicinity of the compasses been noted 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.

Builder's Signature.

Date 1/9/47

Is this installation a duplicate of a previous case Yes No If so, state name of vessel Beaver Glen

Plans. Are approved plans forwarded herewith No If not, state date of approval 28/4/45

Certificates. Are certificates of test for motors engaged on essential services and generators forwarded herewith Yes

General Remarks (State quality of workmanship, whether insulation tests, etc., have been made, opinions as to class, etc.)

The electrical equipment of this vessel has been installed under special survey, tested under full working conditions and found satisfactory.

The materials and workmanship are good

Total Capacity of Generators 1210 Kilowatts.

Power from Aux. Generators for excitation of Propulsion Machinery :- 115 kws.

The amount of Fee ... £ 72 : 7/6 (1095kW) When applied for SEP 1947
4/5 to Glasgow
1/10 to London
Traveling Expenses (if any) £ : :
London Expenses £ 2 : 15/10 When received

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

Committee's Minute GLASGOW 9 SEP 1947

Assigned SEE ACCOMPANYING MACHINERY REPORT

5m. 4.38. - Transfer. (MADE AND PRINTED IN ENGLAND.) (The Surveyors are requested not to write on or below the space for Committee's Minute.)

