

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office 8 NOV 1943

Date of writing Report 25-9-43 When handed in at Local Office 10-10-43 Port of Middlesbrough

No. in Survey held at Haverton Hill-on-Tees Date, First Survey 2-4-43 Last Survey 21-9-43
Reg. Book. 37251 on the S/S. "EMPIRE CHIEFTAIN" (Number of Volls 20)

Built at Haverton Hill-on-Tees By whom built Furness Shipbuilding Co Yard No. 354 When built 1943
Owners The Ministry of War Transport Port belonging to Middlesbrough

Electrical Installation fitted by Furness Shipbuilding Co Ltd Contract No. 354 When fitted 1943

Is vessel fitted for carrying Petroleum in bulk No Is vessel equipped with D.F. Yes E.S.D. Yes G.C. Yes Sub.Sig. No

Have plans been submitted and approved Yes System of Distribution Two-Wire insulated Voltage of supply for Lighting 220
Heating 220 Power 220 Direct or Alternating Current, Lighting Yes Power Yes 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

positive 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 engine room, starboard side of Turbine plate.
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 engine room starboard, on raised platform
above generators

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 heavy "Sindacoy" 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 a triple-pole air-break
circuit breaker (one pole for equaliser) fitted with O.P. N/V & Reverse current tripping devices

with time-lag: for emergency generator a double pole air-break circuit breaker with interlocks O.P.
and for each outgoing circuit a double pole quick break knife switch and double pole fuse: a

double pole air break circuit breaker for controlling Main Circulating Pump Motor

Are compartments containing switchboards composed of fire-resisting material or lined as per Rule Yes Instruments on main switchboard 10
ammeters 2. 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 E lamps coupled to E through fuses

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 test 900A, 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 115A 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 —
state maximum fall of pressure between bus bars and any point under maximum load 7.8 lb. sq. in. the ends of all cables having a sectional area of 0.06

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 ^{and 'drip holes' out.} 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. No, if so, are they adequately protected —. Are cables in machinery spaces, galleys, laundries, etc., lead covered yes or run in conduit —. State how the cables are supported and protected all cables V.C. insulated: In machinery spaces, tween decks, forecabin etc V.C.L.C.B cables clipped to steel bracing or perforated metal tray fastened to the surface: In accommodation V.C.L.C. cables clipped to wooden grounds and protected where necessary.

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

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 effectively bushed yes and with what material Lead. Alternative Lighting, are the groups of lights in the engine and boiler rooms arranged as per Rule yes. Emergency Supply, state position accumulator-fed emergency lanterns fitted and method of control connector-operated on failure of ships supply.

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 —, are they adequately ventilated — what is the battery capacity in ampere hours —.

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 none fitted, 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 — 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 none fitted. 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, 'tween 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	RATED AT				DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.	
		Kilowatts.	Volts.	Ampères.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN	3	175	220	796	575	6-cylinder Vertical Diesel Engine	Pool brand Oil	Above 150°
EMERGENCY	1	10	220	45.5	1000	3-cylinder Vertical Diesel Engine	Oil	10.
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 No. 1	175	2	61/093	796	928	60	V.C.	L.C.A.B.
" " EQUALISER		1	61/093		460	30	"	"
" " No. 2	175	2	61/093	796	928	72	"	"
" " Equaliser		1	61/093		460	36	"	"
" " No. 3	175	2	61/093	796	928	80	"	"
" " Equaliser		1	61/093		460	40	"	"
EMERGENCY GENERATOR	10	1	7/052	45.5	57	90	"	"
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.	Rate.			
AUX. SWITCHBOARDS AND SECTION BOARDS ...							
Vent Fans SB.	1	7/036	26	28	300	V.C.	L.C.A.T.B.
Refrigeration Mach. SB.	1	7/036	25	28	196	"	"
Generator Cooling pumps SB.	1	1/064	8	10	84	"	"
Oil Purified Motors SB.	1	1/064	6	10	210	"	"
Oil Purifier Workshop SB.	1	7/014	34	42	252	"	"
Oil Fuel Pressure pumps SB.	1	7/029	12	15	66	"	"
Wind Ring Main Fwd 1.	2.	19/083			2x191/1446	"	"
" " " " 2.	2	19/083			2x191/1208	"	"
" " " " Midsp.	2	19/083			2x191/1372	"	"
" " " " aft	2	19/083			2x191/1160	"	"

LIGHTING AND HEATING, ETC., CABLES.

WIRELESS ...	1	7/064	-	45	386	V.C.	L.C.
NAVIGATION LIGHTS Main	1	7/036	10.5	28	340	"	"
do. Emergency	1	7/036	-	28	340	"	"
Lighting and Heating	1	7/044	-	42	320	"	"
5. + Radio supply	1	7/044	-	42	320	"	"
off illumination D.B.	1	7/036	11.5	28	500	"	L.C.A.T.B.
Large lighting D.B.	1	7/044	31.6	42	168	"	"
Engine Room lighting D.B.	1	7/044	24	42	120	"	"
Battery Charger Circuit	1	7/029	-	15	120	"	"
Hospital Radiator Circuit	1	7/029	14	15	160	"	L.C.
Galley D.B.	1	7/036	18	28	148	"	L.C.A.T.B.
Emergency H/T supply	1	7/044	-	42	232	"	L.C.
440. Compress Circuit	1	7/036	8	28	260	"	L.C.A.T.B.
Engine Room Fan.	1	7/029	7	15	120	"	" (Hurry only)
R.D.F. Circuit	1	7/036	-	28	200	"	L.C.
Midship Lighting D.B. "C"	1	7/036	7.1	28	148	"	L.C.A.T.B.
" " " " "D"	1	7/029	6.7	15	148	"	"
" " " " "F"	1	7/036	5.8	28	252	"	"
" " " " "E"	1	7/029	6.7	15	250	"	"

MOTOR CABLES.

ALL IMPORTANT MOTORS TO BE ENUMERATED.	No.	B.H.P.							
Main circulating P.	1	35/78	1	37/083	105/285	296	318	V.C.	L.C.A.T.B.
Fwd Bridge P.	1	14/24	1	19/052	57/94	104	282	"	"
Oil Purifier (off Q.P.'s SB)	3	1/2	1	1/064	2.6	10	19/54/30	"	"
Oil Purifier (off D.P.'s SB)	2	3	1	7/029	13.1	15	34/56	"	"
Ballast Pump.	1	20/34	1	19/064	78/132	135	292	"	"
Fwd Draft Fan	2	37	1	19/083	144/201	191	180/180	"	"
General Service P.	1	7/11	1	7/052	40/65	57	290	"	"
Fwd Lub. Oil P.	2	10/14	1	7/052	40/55	57	246/250	"	"
Oil Fuel Transfer P.	1	8	1	7/044	33.2	42	206	"	"
Condensate extraction P.	2	13 1/2	1	7/052	50.5	57	210/210	"	"
Gen. Cooling P. (off G.L.P. SB)	2	2 1/2	1	1/064	9	10	44/66	"	"
Fwd Water P. (off W.T.W. SB)	1	4	1	7/029	16	15	120	"	"
Turbo Gear (off W.T.W. SB)	1	8/16	1	7/044	31	42	190	"	"
Workshop M. (off W.T.W. SB)	1	4	1	7/029	12.5	15	60	"	"
Sanitary P. " "	1	1.5	1	1/064	6.9	10	160	"	"
Mixing Gear Motor	2	35	1	19/064	134	135	600/660	"	"
Windlass (off Wind R.M.)	1	69	1	37/083	260	296	80	"	"
Wind Motors Fwd 1.	4	30							
" " " 2.	4	30							
" " " Midship	6	30							
" " " aft	5	30							
Phono Fan M. (off Vent Fans SB)	1	2	1	1/064	8	10	150	"	L.C.
" " " 2. " "	1	2	1	1/064	8	10	160	"	"
" " " 3. " "	1	2	1	1/064	8	10	180	"	"
Passing Exhaust Fan	1	5	1	1/044	2	5	170	"	"
Oil Purifier (off W.P. SB)	1	2.5	1	1/064	8	10	164	"	L.C.A.B.
Rising Compressor	1	5	1	7/036	20	28	30	"	"
" Water Pump	1	7.5	1	2.5/1/064	3	10	100	"	"
Vegetable Rm Fan	1	1/8	1	1/064	2	5	50	"	L.C.
Oil Purifier (off N. SB)	1	2 1/4	1	1/064	9	10	80	"	L.C.A.B.

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.

Whelan Electrical Engineer Date 9-10-1943

COMPASSES.

Minimum distance between electric generators or motors and standard compass 25'
 Minimum distance between electric generators or motors and steering compass 18'

The nearest cables to the compasses are as follows:—

A cable carrying 14 Ampères 7 feet from standard compass on the feet from steering compass.
 A cable carrying 14 Ampères on the feet from standard compass 7 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 every course in the case of the standard compass, and nil degrees on every course in the case of the steering compass.

24 CANNON SHIPBUILDING CO. LIMITED, Builder's Signature. Date 9-10-43
Jas. M. Robertson

Is this installation a duplicate of a previous case no If so, state name of vessel _____

Plans. Are approved plans forwarded herewith yes. If not, state date of approval 22-2-43 + 3-12-42

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 in accordance with the approved plans and the Ministry of Shipping specification and amendments thereto. The materials used are of good quality and design and the workmanship is good. On completion the equipment was operated under load with satisfactory results and the insulation resistance of each circuit was measured and found good. This equipment is in my opinion suitable for a classed vessel.

Noted
22/11/43

Total Capacity of Generator ^(3x175) 525 Kilowatts.
 (1x15)

The amount of Fee ^(10/6) 78/- £ 58.- 7-6
 Land. etc. (1/5) 14-12-0
 Travelling Expenses (if any) £ 1.- 2-0
 (Total etc)

When applied for, 5/10 1943.
 When received, _____ 19_____

S. D. Mann
 Surveyor to Lloyd's Register of Shipping.

Committee's Minute FRI. 17 DEC 1943

Assigned See se made rpt

5m. 23. Transfor. (MADE AND PRINTED IN ENGLAND)
 (The Surveyors are requested not to write on or below the space for Committee's Minute.)