

Rpt. 13.

No. 59185

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office

DEC 29 1937

Date of writing Report 18. 12. 1937 When handed in at Local Office 27. 12. 1937 Port of Glasgow.
 No. in Survey held at Port Glasgow & Glasgow. Date, First Survey 20. 10. 37 Last Survey 20 - 12 - 1937.
 Reg. Book. 26999 on the S.S. "IRON CHIEFTAIN" (Number of Visits 9)
 Built at Port Glasgow. By whom built Lithgow Ltd Yard No. 903 When built 1937.
 Owners Broken Hill Proprietary Co. Ltd Port belonging to Melbourne.
 Electric Light Installation fitted by W. Klein Goodfellows & Co. Ltd Contract No. 903 When fitted 1937.
 Is the Vessel fitted for carrying Petroleum in bulk No.

System of Distribution Two wire
 Pressure of supply for Lighting 220 volts, Heating 220 volts, Power 220 volts.
 Direct or Alternating Current, Lighting Direct.
 If alternating current system, state frequency of periods per second —
 Has the Automatic Governor been tested and found efficient when the whole load is suddenly thrown on or off Yes.
 Generators, do they comply with the requirements regarding temperature rise Yes, are they compound wound Yes.
 are they over compounded 5 per cent. Yes, if not compound wound state distance between each generator —
 Where more than one generator is fitted are they arranged to run in parallel No, is an adjustable regulating resistance fitted in series with each shunt field Yes.
 Have certificates of test results for machines under 100 kw. been submitted and approved Yes.
 Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing —
 Are all terminals accessible, clearly marked, and furnished with sockets Yes, are they so spaced or shielded that they cannot be accidentally earthed, short circuited, or touched Yes.
 Are the lubricating arrangements of the generators as per Rule Yes.
 Position of Generators In Engine Room.
 in way of the generators satisfactory Yes, are they clear of all inflammable material Yes, if situated near unprotected
 woodwork or other combustible material, state distance of same horizontally from or vertically above the generators — and —
 are the generators protected from mechanical injury and damage from water, steam or oil Yes, are their axes of rotation fore and aft Yes.
 Earthing, are the bedplates and frames of the generating plant efficiently earthed Yes, are the prime movers and their respective generators
 in metallic contact Yes Main Switch Boards, where placed In Engine Room near generators.
 If the generators and main switchboard are not placed in the same compartment, is each generator provided with a fuse on each insulated pole as near as possible to the terminals of the generator, additional to that provided on the main switchboard —
 Switchboards, are they placed in accessible positions, free from inflammable gases and acid fumes Yes, are they protected from mechanical injury and damage from water, steam or oil Yes, if situated near unprotected woodwork or other combustible material, state distance of same horizontally from or vertically above the switchboards — and —, are they constructed wholly of durable, non-ignitable non-absorbent materials Yes, is all insulation of high dielectric strength and of permanently high insulation resistance Yes.
 is it of an approved type Yes, if semi-insulating material is used, are all conducting parts insulated from the slab with mica or micanite or other non-hygroscopic insulating material, and the slab similarly insulated from its framework Sindanyo, is the non-hygroscopic insulating material of an approved type Yes, and is the frame effectively earthed Yes.
 Are the fittings as per Rule regarding: — spacing or shielding of live parts Yes, temperature rise of Yes, accessibility of all parts Yes, absence of fuses on back of board Yes, are moving parts of switches alive in the omnibus bars Yes, individual fuses to voltmeter, pilot or earth lamp Yes, are any fuses fitted on the live side of "off" position No, are all screws and nuts securing connections effectively locked Yes.
 Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches D.P. Circuit Breakers with 1/2 trips for each generator. D.P. % switch & D.P. fuses for each outgoing circuit.
 Are turbine driven generators fitted with emergency trip switch as per rule — Are cupboards or compartments containing switchboards composed of fire-resisting material or lined with approved material Yes.
 Instruments on main switchboard 2 ammeters 2
 voltmeters — synchronising device for paralleling purposes. For compound machines is the ammeter connected on the opposite pole to equaliser connection —
 Earth Testing, state what means are provided at the main switchboard for indicating the state of the insulation of the system Bare Lamps
 Switches, Circuit Breakers and Fusible Cut-outs, do these comply with the requirements of the Rules Yes, are the fusible cutouts of an approved type Yes, have the reversed

Apr 19. No 59185

DEC 29 1937

current protection devices been tested under working conditions — **Joint Boxes, Section and Distribution Boards, is the**

construction, protection, insulation, material, and position of these as per rule *Yes*

Cables: Single, twin, concentric, or multicore *Single Twin* are the cables insulated and protected as per Tables IV, V, X or XI of the Rules *Yes*

If the cables are insulated otherwise than as per Rule, are they of an approved type. — **Fail of Pressure, state maximum between bus bars and**

any point of the installation under maximum load *6.2 Volts* **Cable Sockets, are the ends of all cables having a sectional**

area of 0.04 square inch and above provided with soldering sockets *Yes* **Paper Insulated and Varnished Cambric Insulated Cables,**

If conductors are ~~paper~~ varnished cambric insulated, is the dielectric at the exposed ends of the conductor protected from moisture by being suitably sealed with

insulating compound — or waterproof insulating tape *Yes* **Cable Runs, are the cables fixed as far as possible in accessible positions**

not exposed to drip or accumulation of water or oil, or to high temperature from boilers, steam pipes, uptakes or other hot objects, or to avoidable risk of mechanical

damage *Yes* Are cables in machinery spaces, galleys, laundries, bathrooms and lavatories lead covered or run in conduit *Yes*

Support and Protection of Cables, state how the cables are supported and protected *Main. L.C.A. on Perforated Bars run through beam deck space. Heavy space. L.C.A. clipped. Accommodation. L.C. clipped.*

If cables are run in wood casings, are the casings and caps secured by screws — , are the cap screws of brass — , are the cables run in

separate grooves — . If armoured and lead covered cables are secured by metal clips, are the clips spaced as per Table VIII *Yes*

Refrigerated Chambers, are the cables and fittings in accordance with the special requirements *Yes*

Joints in Cables, state if any, and how made, insulated, and protected *Lead*

Watertight Glands and Deck Tubes, are all cables passing through decks and watertight bulkheads provided with deck tubes or watertight glands

Yes **Bushes in Beams and Non-watertight Partitions, where unarmoured cables pass through beams and non-watertight partitions, are the**

holes efficiently bushed *Yes* state the material of which the bushes are made *Lead.*

Earthing Connections, state what earthing connections are fitted and their respective sectional areas *Lead covering earthing of cables efficiently bonded as fitted.*

are their connections made as per Rule —

Alternative Lighting, are the groups of lights in the propelling machinery space arranged as per Rule *Yes* **Emergency Supply, state**

position and method of control of the emergency supply and how the generator is driven —

Navigation Lamps, are these separately wired *Yes* , controlled by separate switch and separate fuses *Yes* , are the fuses double pole *Yes*

are the switches and fuses grouped in a position accessible only to the officers on watch *Yes*

has each navigation lamp an automatic indicator as per Rule *Yes* **Secondary Batteries, are they constructed and fitted as per Rule** —

Fittings, are all fittings on weather decks, in stokeholds and engine rooms and wherever exposed to drip or condensed moisture, watertight *Yes*

are any fittings placed in spaces in which goods are liable to be stacked in close proximity to them; if so, how are they protected *Yes in beam deck space. Fittings are of heavy metal with strong glasses (Wigan fittings)*

are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected —

how are the cables led —

where are the controlling switches situated —

are all fittings suitably ventilated *Yes* , are all switches and lampholders constructed wholly of non-ignitable, non-absorbent materials *Yes*

Heating and Cooking Appliances, are they constructed and fitted as per Rule *Yes* , are air heaters constructed and fitted as per Rule —

Searchlight Lamps, No. of — , whether fixed or portable — , are their fittings as per Rule —

Arc Lamps, other than searchlight lamps, No. of — , are their live parts insulated from the frame or case — , are their fittings as per Rule —

Motors, are their working parts readily accessible *Yes* , are the coils self-contained and readily removable for replacement *Yes*

are the brushes, brush holders, terminals and lubricating arrangements as per Rule *Yes* , are the motors placed in well-ventilated compartments in which

inflammable gases cannot accumulate and clear of all inflammable material *Yes* , are they protected from mechanical injury and damage from

water, steam or oil *Yes* are their axes of rotation fore and aft *Yes when possible* situated near unprotected woodwork or other combustible

material, are the motors of the totally enclosed, pipe ventilated, forced draught, drip or flame proof type —

if not of this type, state distance of the combustible material horizontally or vertically above the motors — and —

have machines of over 100 BHP been inspected by the Surveyors during manufacture and testing — **Control Gear and Resistances, are the generator**

field and motor speed regulators, starters and controllers constructed and fitted as per Rule *Yes* **Lightning Conductors, where lightning conductors**

are required, are these fitted as per Rule — **Ships carrying Oil having a Flash Point less than 150 F. Have the special requirements of**

the Rules been complied with regarding switches, joint boxes, section and distribution boards, protection of cables, method of distribution, lead of cables, lights and

fittings — are all fuses of the fitted cartridge type — are they of an approved type —

If portable lamps for use in dangerous spaces are supplied, are they of a self-contained, battery-fed type approved by the Home Office —

Spare Gear, if the vessel is for open sea service have spares been supplied as per Rule *Yes*

PARTICULARS OF GENERATING PLANT.

PARTICULARS OF GENERATORS.										WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.	
DESCRIPTION OF GENERATOR.	No. of	RATED AT			Revs. per Min.	DRIVEN BY	Fuel Used.		Flash Point of Fuel.		
		Kilowatts.	Volts.	Ampères.							
MAIN	1	90	220	408	500	Steam Engine	Jordan Rept. 104636				
AUXILIARY	1	50	220	227	550	"	Jordan Rept. 104637				
EMERGENCY											
ROTARY TRANSFORMER											

GENERATOR, LIGHTING AND HEATING CONDUCTORS.									
DESCRIPTION.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT AMPERES.		Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
	No. per Pole.	Total Nominal Area per Pole Sq. Ins.	No.	Diameter.	Circuit.	Rule.			
MAIN GENERATOR	2	.30	37	.072	408	444	60	Varn. Cambric	L.C.A.
EQUALISER CONNECTIONS									
AUXILIARY GENERATOR	1	.20	37	.083	227	266	60	"	" "
EMERGENCY GENERATOR									
ROTARY TRANSFORMER									
MOTOR GENERATOR									
ENGINE ROOM	1	.0228	7	.064	31	46	40	Rubber	L.C.A.
BOILER ROOM	1	.007	7	.036	18	24	50	"	" "
AUXILIARY SWITCHBOARDS									
PANTRY GEAR, SALAMANDER	1	.007	7	.036	22.8	24	120	"	" "
" " STEAMER.	1	.007	7	.036	13.7	24	120	"	" "
" " HOT PRESS.	1	.0145	7	.062	16	37	500	"	" "
WELDING PLANT. (WIRING)	1	.04	19	.052	34	64	360	"	" "
ACCOMMODATION AFT. SECT. BOX	1	.007	7	.036	14.1	24	80	"	" "
NAVIGATION D.B.	1	.007	7	.036	3	24	600	"	" "
MIDSHIP ACC. S.B.	1	.007	7	.036	15	24	500	"	" "
MIDSHIP ACC. CHARGE RTR. D.B.	1	.0225	7	.064	24.5	46	500	"	" "
HOLD LIGHTS D.B.	1	.0225	7	.064	27	46	500	"	" "
	1	.007	7	.036	15	24	600	"	" "
WIRELESS									
SEARCHLIGHT	1	.002	3	.029	18	7.8	400	"	L.C.A. - L.C.B.
MASTHEAD LIGHT	1	.002	3	.029	18	7.8	80	"	L.C.B.
SIDE LIGHTS	1	.002	3	.029	10	7.8	40	"	L.C.B.
COMPASS LIGHTS									
POOP LIGHTS									
CARGO LIGHTS									
ARC LAMPS									
HEATERS GALLERY RANGE.	1	.20	37	.083	228	266	120	Varn. Cambric	L.C.
SHORE CONNECTION	1	.15	37	.072	200	222	200	"	L.C.

MOTOR CONDUCTORS.										
DESCRIPTION.	No. of Motors.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT AMPERES.		Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
		No. Per Pole.	Total Nominal Area per Pole Sq. Ins.	No.	Diameter.	In Circuit.	Rule.			
BALLAST PUMP										
MAIN BILGE LINE PUMPS										
GENERAL SERVICE PUMP										
EMERGENCY BILGE PUMP										
SANITARY PUMP										
CIRC. SEA WATER PUMPS										
CIRC. FRESH WATER PUMPS										
AIR COMPRESSOR										
FRESH WATER PUMP										
ENGINE TURNING GEAR										
ENGINE REVERSING GEAR										
LUBRICATING OIL PUMPS										
OIL FUEL TRANSFER PUMP										
WINDLASS										
WINCHES, FORWARD										
WINCHES, AFT										
STEERING GEAR—										
(a) MOTOR GENERATOR	2	1	.06	19	.064	81	83	200	Rubber	L.C.A.
(b) MAIN MOTORS										
WORKSHOP MOTORS D.B.		1	.0225	7	.064	28	46	120	"	" "
VENTILATING FANS D.B.		1	.0045	7	.029	10	18.2	30	"	" "
LATHE MOTOR	1	1	.003	3	.036	9	12	20	"	" "
DRILLING MACHINE MOTOR	1	1	.003	3	.036	7	12	20	"	" "
GRINDER MOTOR.	1	1	.0045	7	.029	12	18.2	20	"	" "
THERMOTANK EXHAUST FAN	1	1	.0045	7	.029	11	18.2	120	"	" "
DOMESTIC REFRIG. MACH. D.B.		1	.0145	7	.052	21	37	500	"	" "

Ap 13. No 59185

All Conductors are of annealed copper conforming to British Standard Specification No. 7 (or International Electro-technical Commission Publication No. 28).

The Insulated Conductors are guaranteed to withstand the immersion and resistance tests specified in the Rules.

The foregoing is a correct description.

For & on behalf of

W. MUIR GOODFELLOW & COY LTD.

Electrical Engineers.

Date 21/12/37

COMPASSES.

Distance between electric generators or motors and standard compass 190 feet

Distance between electric generators or motors and steering compass 190 feet

The nearest cables to the compasses are as follows:—

A cable carrying 3 Ampères 10 feet from standard compass 6 feet from steering compass.

A cable carrying 1/4 Ampères 10 feet from standard compass 10 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 1/2 degrees on any course in the case of the standard compass, and 1/2 degrees on any course in the case of the steering compass.

LITHGOWS LIMITED.

Secretary

Builder's Signature.

Date 23/12/37

Is this installation a duplicate of a previous case. Yes If so, state name of vessel SS 'IRON KNIGHT'

General Remarks (State quality of workmanship, opinions as to class, etc.) The electrical equipment of this

vessel has been fitted on board under special survey, tested under full working conditions & found satisfactory. The materials and workmanship are good.

27/12/37

Wid.

3/1/38

Total Capacity of Generators 140 Kilowatts.

The amount of Fee ... £ 36 : 10

When applied for.

When received.

Travelling Expenses (if any) £ 25.12.37

R.I. Trenchison
Surveyor to Lloyd's Register of Shipping.

Committee's Minute GLASGOW 28 DEC 1937

Assigned SEE ACCOMPANYING MACHINERY REPORT.



© 2019

Lloyd's Register Foundation