

## REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

JUN 15 1938

Received at London Office

Date of writing Report 4-6-38 When handed in at Local Office 13.6.38 Port of Glasgow  
 No. in Survey held at Port Glasgow and Glasgow Date, First Survey 25.3.38 Last Survey 10th June 1938  
 Reg. Book. 38058 on the SS "EL HIND" (Number of Visits.....)

Tons { Gross 5319  
 Net 3225

Built at Port Glasgow. By whom built Lithgow Ltd. Yard No. 912 When built 1938  
 Owners Scindia S. N. Co. Ltd. Port belonging to Bombay.  
 Electric Light Installation fitted by Campbell & Iskenwood Ltd. Contract No. 912. When fitted 1938  
 Is the Vessel fitted for carrying Petroleum in bulk No.

## System of Distribution

two wire

## Pressure of supply for Lighting

110

volts, Heating

volts, Power

110

volts.

## Direct or Alternating Current, Lighting

direct

Power

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

yes

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

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.

is the ventilation

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

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 emergency generator room.

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

yes

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

SINOANYO

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

accessibility of all parts

yes

absence of fuses on back of board

yes

temperature rise of

omnibus bars

yes

individual fuses to voltmeter, pilot or earth lamp

yes

are moving parts of switches alive in the

"off" position

no

are all screws and nuts securing connections effectively locked

yes

are any fuses fitted on the live side of

switches

no

Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switches

Each main generator controlled by T.P. circuit breaker fitted with O.L. & R.C. trips. Emergency generator controlled by D.P. switch & fuses.  
 each outgoing circuit controlled by S.P. switch and D.P.

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

Instruments on main switchboard

one

ammeters

one

voltage

synchronising device for paralleling purposes. For compound machines is the ammeter connected on the opposite pole to equaliser connection

yes

Earth Testing, state what means are provided at the main switchboard for indicating the state of the insulation of the system

earth lamps.

Switches, Circuit Breakers and Fusible Cut-outs.

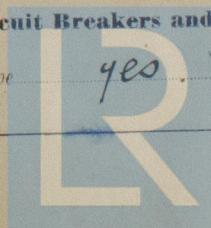
do these comply with the requirements of the Rules

yes

are the fusible cutouts of an approved type

yes

have the reversed





current protection devices been tested under working conditions *yes* ✓ **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 *—* **Fall of Pressure,** state maximum between bus bars and any point of the installation under maximum load *5.2 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 or 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 *—* **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. and L.C.A.B. clipped to steelwork in tween decks. Wiring crew accommodation and machinery spaces L.C.A.B. wiring in officers' accommodation L.C. clipped to woodwork in deck.* ✓  
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 *—*  
**Joints in Cables,** state if any, and how made, insulated, and protected *none* ✓

**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 and armouring efficiently earthed by means of clips or bonding glands.* ✓  
are their connections made as per Rule *yes* ✓

**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 *emergency generator situated in special compartment at top of engine room and controlled by D.P.C.O. switch & fuses.* ✓

**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 *tween deck lighting, wigan type fittings of metal with strong glass.* ✓  
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 *—*, are air heaters constructed and fitted as per Rule *—*  
**Searchlight Lamps, No. of** *—*, whether fixed or portable *—*, are their fittings as per Rule *—*  
**Are 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* ✓ *if 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 filled 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.

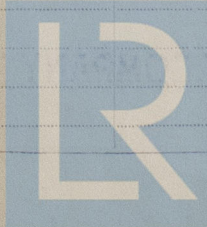
DESCRIPTION OF GENERATOR.	No. of	RATED AT				DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.	
		Kilowatts.	Volts.	Ampères.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN ...	2	12½	110	114	400	steam engines.		
AUXILIARY ...								
EMERGENCY ...	1	25	110	227	1000	Int. Comb. engine.	oil	above 150° F.
ROTARY TRANSFORMER								

GENERATOR, LIGHTING AND HEATING CONDUCTORS.

DESCRIPTION.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT.		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 ...	1	01	19	083	114	118 ✓	120	H.R.	Conduit.
EQUALISER CONNECTIONS ...	1	04	19	052	—	64 ✓	60	H.R.	"
AUXILIARY GENERATOR ...									
EMERGENCY GENERATOR ...	1	3	37	103	227	240 ✓	15	Rubber.	L.C.A.B.
ROTARY TRANSFORMER } MOTOR GENERATOR ...									
ENGINE ROOM. } D.B. ...	1	007	7	036	19.5	24 ✓	95	"	"
BOILER ROOM. ...									
AUXILIARY SWITCHBOARDS ...									
Navigation D.B. ...	1	0225	7	064	36	46 ✓	390	"	"
Cargo S.B. ...	1	0225	7	064	33	46 ✓	12	"	"
Tank S.B. ...	1	06	19	064	63	83 ✓	40	"	"
Emergency D.B. ...	1	003	3	036	5.5	12 ✓	36	"	"
ACCOMMODATION ...									
Accommodation S.B. ...	1	0225	7	064	36	46 ✓	40	"	"
POOP LIGHTING D.B. ...	1	0045	7	029	7.75	18.2 ✓	300	"	"
Marthouse S.B. ...	1	0225	7	064	31	46 ✓	50	"	"
Upper Deck D.B. ...	1	007	7	036	17.1	24 ✓	90	"	"
WIRELESS ...	1	007	7	036	20	24 ✓	100	"	"
SEARCHLIGHT ...									
MASTHEAD LIGHT ...	1	002	3	029	36	7.8 ✓	590	"	"
SIDE LIGHTS ...	1	002	3	029	36	7.8 ✓	135	"	L.C
COMPASS LIGHTS ...	1	002	3	029	2	7.8 ✓	65	"	"
POOP LIGHTS ...									
CARGO LIGHTS ...									
ARC LAMPS ...									
HEATERS ...									

MOTOR CONDUCTORS.

DESCRIPTION.	No. of Motors.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT.		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 ...	1	1	12	37	064	133.	130 ✓	250	Rubber	L.C.A.B.
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 ...										
(b) MAIN MOTOR ...										
WORKSHOP MOTOR ...	1	1	003	3	036	9.9	12 ✓	30	"	"
VENTILATING FANS ...										



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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.

CAMPBELL & FISHERWOOD LTD.

per

*Ben Steward*

Electrical Engineers.

Date *9/6/38.*

#### COMPASSES.

Distance between electric generators or motors and standard compass *112 feet*

Distance between electric generators or motors and steering compass *120 feet.*

The nearest cables to the compasses are as follows:—

A cable carrying *2* Amperes *led into* feet from standard compass *led into* feet from steering compass.

A cable carrying *36* Amperes *6* feet from standard compass *6* feet from steering compass.

A cable carrying Amperes 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.

LITHGOWS LIMITED.

*John M. Fullerton* Secretary

Builder's Signature.

Date *10/6/38.*

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

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 and tested under full working conditions and found satisfactory. The workmanship and materials are good.*

*Note*

*L.F.*

*20/6/38.*

Total Capacity of Generators *50* Kilowatts.

The amount of Fee ... £ *27 : 10 :* When applied for, *argh.*

Travelling Expenses (if any) £ *12/6 :* When received. *18 6 19 34 420 6*

*R.I. Lushchikov* *L. Haffner*  
Surveyor to Lloyd's Register of Shipping.

Committee's Minute **GLASGOW 14 JUN 1938**

Assigned **SEE ACCOMPANYING MACHINERY REPORT.**



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