

# REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Date of writing Report 11th Sept 42, When handed in at Local Office 19 SEP 1942 Received at London Office 21 SEP 1942  
Port of Sunderland

No. in Survey held at Sunderland Date, First Survey 10th Aug Last Survey 18th Sept, 1942  
Reg. Book. (Number of Visits.....)

74995 on the M.V. "HARDINGHAM" Tons {Gross... 7269  
Net... 5041

Built at Sunderland By whom built Wm Beard & Co Ltd Yard No. 692 When built 1942

Owners Sawland S.S. Co. Ltd. Port belonging to London

Electrical Installation fitted by Campbell & Johnson Ltd. Contract No. 692 When fitted 1942

Is vessel fitted for carrying Petroleum in bulk no Is vessel equipped with D.F. no E.S.D. no Gy.C. no Sub.Sig. no

Have plans been submitted and approved no System of Distribution Two wire insulated Voltage of supply for Lighting 110

Heating 110 Power 110 Direct no Alternating Current, Lighting no Power no 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 no Are turbine emergency governors fitted with a

trip switch as per Rule. Generators, are they compound wound no, are they level compounded under working conditions no,

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 no, are shunt field regulators provided no 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. Have certificates of

test for machines under 100 kw. been supplied no and the results found as per rule no Are the lubricating arrangements and the construction

of the generators as per rule no Position of Generators Engine room starboard side aft

, is the ventilation in way of generators satisfactory no are they clear of inflammable material no, 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 no, are the bedplates and frames earthed no and the prime movers and generators in metallic

contact no Switchboards, where are main switchboards placed Engine room starboard side on

aft bulkhead

are they in accessible positions, free from inflammable gases and acid fumes no, are they protected from mechanical injury and damage from water, steam

and oil no, if situated near unprotected combustible material state distance from same horizontally. and vertically. what insulation

material is used for the panels "Economy Linsamyl", if of synthetic insulating material is it an Approved Type no, if of

semi-insulating material (slate or marble) are all conducting parts insulated therefrom as per Rule. Is the frame effectually earthed no

Is the construction as per Rule no, including accessibility of parts no, absence of fuses on the back of the board no, individual fuses

to pilot and earth lamps, voltmeters, etc. no locking of screws and nuts no, labelling of apparatus and fuses no, fuses on the "dead"

side of switches no Description of Main Switchgear for each generator and arrangement of equaliser switches Double pole

circuit breaker with overload trip and time lag device

on each pole.

and for each outgoing circuit Double pole double throw quick break knife

switch and double pole fuse.

Are compartments containing switchboards composed of fire-resisting material or lined as per Rule. Instruments on main switchboard Two

ammeters Two voltmeters. synchronising devices. For compound machines in parallel is the ammeter connected on the pole opposite to the

equaliser connection. Earth Testing, state means provided Elamps coupled to E through r.w.s. fuses.

Switches, Circuit Breakers and Fuses, are they as per Rule no, are the fuses an approved type no, are all fuses labelled as

per Rule no If circuit breakers are provided for the generators, at what overload current did they open when tested 200 A. are the reversed current

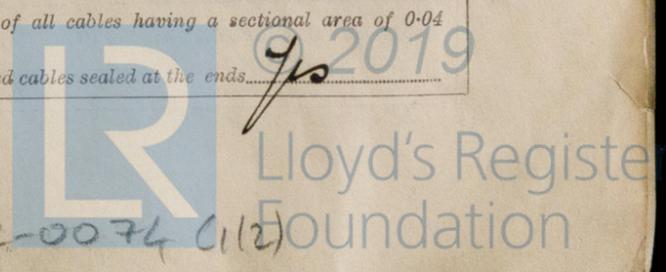
protection devices connected on the pole opposite to the equaliser connection. have they been tested under working conditions, and at what current

did they operate. Joint Boxes, Section Boards and Distribution Boards, is the construction and position as per Rule no

Cables, are they insulated and protected as per the appropriate Tables of the Rules no, if otherwise than as per Rule are they of an approved type Some "Pyrotinax" cable fitted

state maximum fall of pressure between bus bars and any point under maximum load 4.44, are the ends of all cables having a sectional area of 0.04

square inch and above provided with soldering sockets no Are paper insulated and varnished cambric insulated cables sealed at the ends no



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with insulating compound or waterproof insulating tape 7/2. 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 7/2, are cables laid under machines or floorplates 7/2, if so, are they adequately protected 7/2. Are cables in machinery spaces, galleys, laundries, etc., lead covered 7/2 or run in conduit 7/2. State how the cables are supported and protected V.I.R. cables run in heavy galvanized screwed conduit in 'tween deck and in machinery spaces. L.C.B. cables clipped to wood grounds on top surface in accommodation. "Pyraline" cable fitted in wheelhouse and boiler rooms.

Are all lead sheaths, armouring and conduits effectually bonded and earthed 7/2. Refrigerated chambers, are the cables and fittings as per Rule 7/2.

Are all cables passing through decks and watertight bulkheads provided with deck tubes or watertight glands 7/2, where unarmoured cables pass through beams, etc., are the holes effectually bushed 7/2 and with what material Lead. Alternative Lighting, are the groups of lights in the engine and boiler rooms arranged as per Rule 7/2. Emergency Supply, state position 7/2 and method of control 7/2.

Navigation Lamps, are they separately wired 7/2 controlled by separate double pole switches 7/2 and fuses 7/2. Are the switches and fuses in a position accessible only to the officers on watch 7/2, is an automatic indicator fitted 7/2. Secondary Batteries, are they constructed and fitted as per Rule 7/2, are they adequately ventilated 7/2 what is the battery capacity in ampere hours 7/2.

Fittings, are all fittings on weather decks, in stokeholds and engine rooms and wherever exposed to drip or condensed moisture, weatherproof 7/2. Are fittings installed where readily combustible materials or inflammable or explosive dust or gases are likely to be present 7/2, if so, how are they protected 7/2 and where are the controlling switches fitted 7/2, are all fittings suitably ventilated 7/2, are all fittings and accessories constructed and installed as per Rule 7/2. Searchlight Lamps, No. of 7/2, whether fixed or portable 7/2, are their fittings as per Rule 7/2. Heating and Cooking, is the general construction as per Rule 7/2, are the frames effectually earthed 7/2, are heaters in the accommodation of the convection type 7/2. Motors, are all motors constructed and installed as per Rule 7/2 and placed in well-ventilated compartments in which inflammable gases cannot accumulate and free from damage from water, steam and oil 7/2, if situated near unprotected combustible material state minimum distance from same horizontally 7/2 and vertically 7/2. 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 7/2. Have motors of 100 BHP and over been inspected by the Surveyors during manufacture and testing 7/2. Have certificates of test for motors under 100 BHP intended for essential services been supplied and the results found as per Rule 7/2. Control Gear and Resistances, are they constructed and fitted as per Rule 7/2. Lightning Conductors, where required are they fitted as per Rule 7/2. 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 7/2, are all fuses of the cartridge type 7/2 are they of an approved type 7/2. Are the fittings for pump rooms, 'tween deck spaces, etc., in accordance with the special requirements for such ships 7/2. Are the cables lead covered as per Rule 7/2. Spare Gear, if the vessel is for open sea service have spares been provided as per Rule 7/2, are they suitably stored in dry situations 7/2. Insulation Tests, has the insulation resistance of all circuits and apparatus been tested and found satisfactory 7/2.

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	15	110	136.5	600	Single cylinder steam engines		
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 GENERATORS	2 x 15	1	19/085	136.5	19/	961/06	V.C.	L.C.B.
" " EQUALISER								
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							
Saloon Section Board	1	19/064	47	83	350	V.I.R.	In h.g. conduit
Engineers' Section Board	1	19/064	19	83	100	Do.	Do.
Engine Room Section Board	1	19/064	26.3	83	50	Do.	Do.

LIGHTING AND HEATING, ETC., CABLES.

WIRELESS	1	7/064	15	46	300	V.I.R.	In h.g. conduit & L.C.B.
NAVIGATION LIGHTS	1	7/064	10	31/42	400	V.I.R.	Do.
LIGHTING AND HEATING	All fed to main 25g. ab from 250 lights ab.						
Saloon 25g. ab	1	7/064	19	22	8	V.C.	L.C.B.
Captain's 25g. ab	1	7/064	6	28	40	Do.	L.C.B.
Forward 25g. ab	1	7/064	12	28	70	Do.	L.C.B.
Stowage	1	3/086	10	10	16	V.I.R.	L.C.B.
Engine's Port 25g. ab	1	7/064	8	42	52	V.C.	L.C.B.
Engine's Starboard 25g. ab	1	7/064	8	31	8	V.I.R.	In h.g. conduit
Galley Fan	1	3/086	3	10	40	Do.	L.C.B.
Engine 25g. ab	1	3/086	-	10	40	Do.	L.C.B.
Engine Room 25g. ab	1	7/064	30	46	36	Do.	In h.g. conduit
Off 25g. ab	1	7/064	10	31	400	Do.	Do.

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.			
Oil Burning Fan	1	5	1	7/064	42	46	150	V.I.R.	In h.g. conduit
Burning Pump	1	1 1/2	1	7/064	13.5	31	120	Do.	Do.
Oil Separator	2	3	1	7/064	25.1	31	150	Do.	Do.
Oil Crane	1	3	1	7/064	27	31	100	Do.	Do.
Workshop motor	1	2	1	7/064	17	31	180	Do.	Do.
Rising Inlet	2	3 or 1	1	7/064	25.49	46	300	Do.	Do.
Relief Valve	1	3 1/2	1	7/064	29.7	31	200	Do.	Do.
E.R. Fans	2	3/4	1	7/064	7	31	120/180	Do.	Do.

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.

GAMPBELL & ISHERWOOD, LTD.

Electrical Engineers.

Date 16th Sept 1942

COMPASSES.

Minimum distance between electric generators or motors and standard compass 122 feet

Minimum distance between electric generators or motors and steering compass 120 feet

The nearest cables to the compasses are as follows:—

A cable carrying .14 Ampères on the ~~port~~ standard compass 7 feet from steering compass.

A cable carrying .14 Ampères 7 feet from standard compass on the ~~port~~ 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.

WILLIAM DOXFORD & SONS, Limited.

Builder's Signature.

Date 12/9/42

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

Plans. Are approved plans forwarded herewith *No* If not, state date of approval 29/6/42 & 18/5/42

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. The materials used are of good quality and the workmanship is good. On completion the equipment was run under working conditions with satisfactory results, the protective devices of the circuit breakers were adjusted and operated and the insulation resistance of all circuits was measured and found satisfactory. This equipment is in my opinion suitable for a classed vessel.*

*Noted  
 L.H.  
 22/9/42.*

Total Capacity of Generators *20* Kilowatts.

The amount of Fee ... £ 22 : 10 : 17 SEP 1942

Travelling Expenses (if any) £ : : When received. 19

*Stanton*  
 Surveyor to Lloyd's Register of Shipping.

Committee's Minute **FRI 25 SEP 1942**

Assigned *See Std. G.L. 33488*

Form 434—Transfer. (MADE AND PRINTED IN ENGLAND.)  
 (The Surveyors are requested not to write on or below the space for Committee's Minute.)



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