

Rpt. 13.

# REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL) Received at London Office 24 APR 1930

Date of writing Report 25 March 1930 When handed in at Local Office 8 April 1930 Port of Kobe.

No. in Survey held at Osaka Date, First Survey 30<sup>th</sup> Nov. 1929. Last Survey 31 March 1930  
Reg. Book. (Number of Visits 10)

on the Twin screw motor ship "HEIYO MARU." Tons { Gross 985.69.  
Net

Built at Osaka By whom built Osaka Iron Works Yard No. 1127. When built 1929.

Owners Nippon Yusen Kaisha Port belonging to Tokyo.

Electric Light Installation fitted by Osaka Iron Works Contract No. 1127. When fitted 1930.

System of Distribution Two wire system volts, Power 220. volts.

Pressure of supply for Lighting 220 and 24 volts, Heating 220 Power Direct current.

Direct or Alternating Current, Lighting Direct current.

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 overload 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.

Are all terminals accessible and clearly marked Yes, are they so spaced or shielded that they cannot be accidentally earthed,

or short circuited Yes. Are the lubricating arrangements of the generators as per Rule Yes.

Position of Generators Main & Aux Generator in engine room. Emergency Generator in Emerg. 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

✓ and ✓, are the generators protected from mechanical injury and damage from water, steam or oil Yes.

are their axis of rotation fore and aft Yes

Earthling, 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 after end.

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, incombustible non-absorbent materials Yes, is all insulation of high dielectric strength and of

permanently high insulation resistance Yes, if semi-insulating material is used, are all conducting parts connected to one pole

insulated from the slab with mica or micanite and the slab similarly insulated from its framework ✓, and is the

frame effectively earthed ✓ Are the following fittings as per Rule, viz.:— spacing or shielding of live parts

Yes, accessibility of all parts Yes, absence of fuses on back of board Yes, proportion of omnibus

bars Yes, individual fuses to voltmeter, pilot or earth lamp Yes, connections of switches Yes

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

breaker with overload and reverse current trip coils for each generator, Double pole circuit breaker with overload current trip coils or double pole switch

with fuses for each outgoing circuit

Instruments on main switchboard 18 amperes 4 voltmeters synchronising device for paralleling purposes.

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

Switches, Circuit Breakers and Fusible Cut-outs, do these comply with the requirements of the Rules Yes

Section and Distribution Boards, is the construction, protection, insulation, material, and position of these as per rule Yes.



Insulation of Cables, state type of cables, single or twin *Both* are the cables insulated and protected as per Tables III or IV of the Rules *yes*

Fall of Pressure, state maximum between bus bars and any point of the installation under maximum load *6 volts*

Cable Sockets and other connections, are the ends of all cables having a sectional area of 0.007 square inch and above provided with soldering sockets *yes*

Paper Insulated Cables, If cables are paper covered, is the dielectric at the exposed ends of the conductor protected from moisture by being suitably sealed with insulating compound *✓*

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*

Support and Protection of Cables, state how the cables are supported and protected *Supported and protected as per Rule*

If cables are run in wood casings, are the casings and caps secured by screws *yes*, are the cap screws of brass *yes*, are the cables run in separate grooves *yes*. If armoured and lead covered cables are secured by metal clips, are the clips spaced as per Table VI *yes*

Refrigerated Chambers, if lights are fitted, are the cables and fittings in accordance with the special requirements *yes*

Joints in Cables, state if any, and how made, insulated, and protected *no joints*

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 Positions, 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 or hard wood*

Earthing Connections, state what earthing connections are fitted and their respective sectional areas *For portable lamp fittings in Engine Room, weather deck: Equal sectional area to the positive & negative conductors*, 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 supply controlled on emergency switchboard.*

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*, are separate screens provided for the use of oil and electric side lights *yes*

are separate oil lanterns provided for the mast head lights and side lights *yes*

Fittings, are all fittings on weather decks, in stakeholds 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 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 *✓*

Searchlight Lamps, No. of *1*, whether fixed or portable *Portable*, are their fittings as per Rule *yes*

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 axis 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 *✓*

Control Gear and Resistances, are the generator field and motor speed regulators, starters and controllers constructed 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 *✓*

If portable lamps for use in dangerous spaces are supplied, are they of a type approved by the Home Office *✓*

PARTICULARS OF GENERATING PLANT.								
DESCRIPTION OF GENERATOR.	No of	RATED AT				DRIVEN BY.	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.	
		Kilowatts.	Volts.	Amperes.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN	3	924	225	1245	300	Diesel Engine	oil	✓
AUXILIARY	1	30	225	137	400	"	"	✓
EMERGENCY	1	27	225	120	1000	Petrol Engine	"	✓
ROTARY TRANSFORMER								

LIGHTING AND HEATING CONDUCTORS.									
Ref. No.	DESCRIPTION.	No. of Conductors.	Effective Area of each Conductor. Sq. Ins.	COMPOSITION OF STRAND.		Total Maximum Current. Amperes.	Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
				No.	Diameter.				
	MAIN GENERATOR...	14	0.60620	91	0.093	1370	110 x 2	V.I.R.	L.C.A.B.
	AUXILIARY GENERATOR	1	0.14780	37	0.072	56	64 x 2	"	"
	EMERGENCY GENERATOR	1	0.14780	37	0.072	233	60 x 2	"	"
	ROTARY TRANSFORMER...								
	AUXILIARY SWITCHBOARDS								
	ENGINE ROOM	1	0.0600	19	0.064	45			
	BOILER ROOM	1	0.0045	7	0.029	8.2			
	Lighting No. 1	1	0.0600	19	0.064	58			
	" " 2	1	0.07892	19	0.072	68			
	" " 3	1	0.0600	19	0.064	58			
	" " 4	1	0.0600	19	0.064	58			
	" " 5	1	0.1478	37	0.072	105			
	" " 6	1	0.1009	19	0.083	92			
	" " 7	1	0.11680	37	0.064	90			
	WIRELESS	1	0.0284	19	0.064	44			
	SEARCHLIGHT	✓	✓						
	MASTHEAD LIGHT...	1	0.00322	1	0.064	0.3			
	SIDE LIGHTS...	1	"	1	0.064	0.3			
	COMPASS LIGHTS	1	"	1	0.064	1.8			
	POOP LIGHTS	✓							
	CARGO LIGHTS	1	0.03960	19	0.052	30			
	ARC LAMPS	✓							
	HEATERS	✓							

MOTOR CONDUCTORS.									
Ref. No.	DESCRIPTION.	No. of Motors.	Effective Area of each Conductor. Sq. Ins.	COMPOSITION OF STRAND.		Total Maximum Current. Amperes.	Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
				No.	Diameter.				
	BALLAST PUMP	1	0.10090	19	0.083	101.5	38 x 2	V.I.R.	L.C.A.B.
	MAIN BILGE LINE PUMPS	1	0.11680	37	0.064	109	46 x 2	"	"
	GENERAL SERVICE PUMP	1	"	"	"	"	70 x 2	"	"
	EMERGENCY BILGE PUMP	1	0.0600	19	"	70	150 x 2	"	"
	SANITARY PUMP	1	"	"	"	63	78 x 2	"	"
	CIRC. SEA WATER PUMPS	1	0.4064	61	0.093	248	160 x 2	"	"
	CIRC. FRESH WATER PUMPS	1	0.11680	37	0.064	108	130 x 2	"	"
	AIR COMPRESSOR	1	480.6062	4891	0.093	1400	86 x 2	"	"
	FRESH WATER PUMP	1	0.02214	7	0.064	39.6	70 x 2	"	"
	ENGINE TURNING GEAR	1	"	"	"	42	60 x 2	"	"
	ENGINE REVERSING GEAR	✓							
	LUBRICATING OIL PUMPS	1	0.24650	37	0.093	145	50 x 2	"	"
	OIL FUEL TRANSFER PUMP	1	0.1498	"	0.072	135	50 x 2	"	"
	WINDLASS	1	0.40640	61	0.093	350	20 x 2	"	"
	WINCHES, FORWARD	10	280.6042	2891	"	960	270 x 2	"	"
	WINCHES, AFT	7	0.6062	91	"	440	150 x 2	"	"
	STEERING GEAR	1	0.14780	37	0.072	135	180 x 2	"	"
	WORKSHOP MOTOR	1	0.01462	7	0.052	21.8	50 x 2	"	"
	VENTILATING FANS	1	"	"	"	36	150 x 2	"	"

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All Conductors are of annealed copper conforming to British Standard Specification No. 7.  
The Insulated Conductors are guaranteed to withstand the immersion and resistance tests specified in the Rules.  
The foregoing is a correct description.

Electrical Engineers.

Date

#### COMPASSES.

Distance between electric ~~generators or~~ motors and standard compass *15-0"* *Compass & fan motor*

Distance between electric generators or motors and steering compass

The nearest cables to the compasses are as follows:—

A cable carrying *0.3* Amperes *5* feet from standard compass *4* feet from steering compass.

A cable carrying *✓* Amperes *✓* feet from standard compass *✓* 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 *with electric installation*

Has the effect of switching on and off circuits, motors and other electro-magnetic apparatus within the vicinity of the compasses been noted *no*

The maximum deviation due to electric currents was found to be *✓* degrees on *✓* course in the case of the standard compass, and *✓* degrees on *✓* course in the case of the steering compass.

Builder's Signature.

Date *7.4.30.*

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, &c.) *The electrical installation of this vessel has been installed under special survey in accordance with the requirements of the Rules and approved plans; the workmanship and materials are good and on completion the installation was tested under full working conditions and found to be efficient, and in our opinion, is eligible for the record of ELECTRIC LIGHT.*

*Elec. Light*

*D.H. 25/4/30.*

Total Capacity of Generators *924* Kilowatts

The amount of Fee ...

£ *560.4*

When applied for,

*20/3/1930*

Travelling Expenses (if any) £

When received,

*21/3/1930*

*A. H. Garnett & A. Morrison*  
Surveyor to Lloyd's Register of Shipping.

Committee's Minute

TUE. 29 APR 1930

TUE. 13 MAY 1930

Assigned

*Elec. Lt.*

TUE. 28 OCT 1930

WED. 8 APR 1931

FRI. 17 APR 1931

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Foundation