

# REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL) [ 4 SEP 1930  
Received at London Office.....

Date of writing Report 15<sup>th</sup> Aug 1930 When handed in at Local Office 16-8-1930 Port of YOKOHAMA

No. in Survey held at Yokohama Date, First Survey 7/4/30 Last Survey 15<sup>th</sup> August 1930  
Reg. Book. (Number of Visits... 22)

on the Steel Twin Screw Motor Vessel "HIYE MARU" Tons { Gross 11,621.71  
Net 6,787.05

Built at Yokohama By whom built Yokohama Dock Co. Yard No. 178 When built 1930

Owners Nippon Yusen Kaisha Port belonging to Tokio

Electric Light Installation fitted by Yokohama Dock Co. Contract No. 178 When fitted 1930

Is the Vessel fitted for carrying Petroleum in bulk No.

System of Distribution Two wire system

Pressure of supply for Lighting 225 volts, Heating 225 volts, Power 225 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 rating 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, 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 Bottom platform of engine room Port and starboard sides, 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 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 After end of engine room on 3rd deck level.  
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  
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, if semi-insulating material is used, are all conducting parts insulated from the slab with mica or micaite or other non-hygroscopic insulating material, and the slab similarly insulated from its framework  
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, 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 for each generator:  
One triple pole automatic circuit breaker (including equalizer switch) with remote controlling device overload, no volt reverse current relay. For outgoing circuits One Double Pole switch with safety device.

Instruments on main switchboard 20 ammeters 5 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 Earth meters & lamps.

Switches, Circuit Breakers and Fusible Cut-outs, do these comply with the requirements of the Rules 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 are the cables insulated and protected as per Tables IV or V of the Rules Yes.

Fall of Pressure, state maximum between bus bars and any point of the installation under maximum load 8

Cable Sockets and other connections, are the ends of all cables having a sectional area of 0.04 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 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

Support and Protection of Cables, state how the cables are supported and protected Iron & Brass clips

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 VIII 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 Ends of cables secured by screws in metal joint boxes

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 Rubber insulated wire .011 sq. in.

Alternative Lighting, are the groups of lights in the propelling machinery space arranged as per Rule Yes, are their connections made as per Rule Yes

Emergency Supply, state position and method of control of the emergency supply and how the generator is driven On boat deck, with change over switch. Generator driven by gasoline engine

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 Yes

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 By guards

are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected by gas proof fittings, how are the cables led through steel tubes

where are the controlling switches situated outside the spaces

Searchlight Lamps, No. of 2, whether fixed or portable fixed, are their fittings as per Rule Yes

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

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

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 Yes

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 Yes

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

PARTICULARS OF GENERATING PLANT.

DESCRIPTION OF GENERATOR	No. of	RATED AT				DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE	
		Kilowatts	Volts	Amps.	Revs. per Min.		Fuel Used	Flash Point of Fuel
MAIN	3	325	225	1600	290	Diesel Engine	Heavy oil	above 150° F.
AUXILIARY	1	40	225	178	400	"	"	"
EMERGENCY	1	35	225	155	1200	Gasoline Engine	gasoline	"
ROTARY TRANSFORMER	1	2.25	40/30	563	1450	motor		

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 Effective Area per Pole Sq. Ins.	No.	Diameter	In Circuit	Rate			
MAIN GENERATOR	10	.496	61	.103	1600	1650	115	Rubber	Lead Covered Braided
EQUALISER CONNECTIONS	3 main 10 aux	.496	61	.103	1800	288	145	"	Lead Covered, armoured & Braided
AUXILIARY GENERATOR	2	.405	61	.093	178	288	100	"	"
EMERGENCY GENERATOR	2	.195	37	.083	155	184	30	"	"
ROTARY TRANSFORMER MOTOR	2	.007	4	.036	155	24	20	"	"
GENERATOR	2	.022	4	.064	25	46	20	"	"
ENGINE ROOM	2	.160	19	.083	96	118	40	"	"
AUXILIARY SWITCHBOARDS "R"	4	.495	3/61	.103	562	664	260	"	"
AUXILIARY SWITCHBOARDS "B"	2	.30	37	.103	181	240	320	"	"
" " "D"	2	.100	19	.083	78	118	280	"	"
" " "E"	4	.248	3/37	.093	410	428	220	"	"
" " "F"	4	.496	2/61	.103	1020	1080	440	Paper	"
" " "G"	4	.405	3/61	.093	855	928	220	"	"
Accommodation " "H"	4	.496	2/61	.103	1020	1080	500	"	"
" " "I"	4	.405	2/61	.093	855	928	280	"	"
Emergency	2	.405	61	.093	286	288	190	Rubber	"
WIRELESS	2	.062	19	.064	46	83	340	"	"
SEARCHLIGHT	2	.0031	1	.064	5	12.9	40	"	Lead Covered Braided
MASTHEAD LIGHT	2	.0019	3	.029	.28	7.8	200	"	"
SIDE LIGHTS	2	.0019	3	.029	.28	7.8	60	"	Lead Covered, armoured & Braided
COMPASS LIGHTS	3	.0019	3	.029	.50	7.8	20	"	Lead Covered & Braided
POOP LIGHTS	1	.0019	3	.029	.28	7.8	120	"	Lead Covered, armoured & Braided
CARGO LIGHTS	22	.0019	3	.029	3.5	7.8	60	"	Lead Covered, armoured & Braided
Deck Lights	2	.100	19	.083	61.5	118	50	"	"
HEATERS	2	.248	37	.093	165	214	240	"	"

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 Effective Area per Pole Sq. Ins.	No.	Diameter	In Circuit	Rate			
BALLAST PUMP	1	2	.195	37	.083	148	184	60	Rubber	Lead Covered, armoured & Braided
MAIN BILGE LINE PUMPS	1	2	.100	19	.083	107	118	90	"	"
GENERAL SERVICE PUMP										
EMERGENCY BILGE PUMP	1	2	.062	19	.064	80	83	350	"	"
SANITARY PUMP	2	2	.100	19	.083	79	118	40	"	"
CIRC. SEA WATER PUMPS	4	2	.125	37	.072	121	152	120	"	"
CIRC. FRESH WATER PUMPS	2	2	.0031	1	.064	35	12.9	36	"	"
AIR COMPRESSOR	1	2	1.218	3/61	.093	660	996	130	"	"
FRESH WATER PUMP	2	2	.062	19	.064	49	83	40	"	"
ENGINE TURNING GEAR	2	2	.062	19	.064	57	83	260	"	"
ENGINE REVERSING GEAR										
LUBRICATING OIL PUMPS	4	2	.248	37	.093	189	214	155	"	"
OIL FUEL TRANSFER PUMP	2	2	.100	19	.083	40	118	90	"	"
WINDLASS	1	2	.605	91	.093	445	461	40	"	"
WINCHES, FORWARD	4	2	.100	19	.083	108	118	460	"	"
WINCHES, AFT	6	2	.248	37	.103	222	240	90	"	"
WINCHES, AFT	4	2	.100	19	.083	108	118	240	"	"
STEERING GEAR	5	2	.248	37	103	222	240	40	"	"
(a) MOTOR GENERATOR										
(b) MAIN MOTOR	2	2	.248	37	.093	170	214	540	"	"
WORKSHOP MOTOR	1	2	.024	4	.064	33.1	46	200	"	"
VENTILATING FANS	3	2	.062	19	.064	78	83	240	"	"
" " "	10	2	.007	4	.064	12	46	300	"	"
" " "	9	2	.0031	1	.064	3	12.9	580	"	"
Emergency Air Compressor	1	2	.195	37	.083	130	184	320	"	"
Fuel Oil Purifiers	2	2	.007	4	.036	15	46	40	"	"
lub. " "	3	2	.0031	1	.064	8.7	12.9	60	"	"
" " Transfer Pump	1	2	.0031	1	.064	4	12.9	230	"	"

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.

*R. Miyake* Electrical Engineers. Date *1<sup>st</sup> Aug. 1930*

COMPASSES.

Distance between electric generators or motors and standard compass *14 feet*  
 Distance between electric generators or motors and steering compass *9 feet*  
 The nearest cables to the compasses are as follows:—  
 A cable carrying *25* Ampères *14* feet from standard compass *6* feet from steering compass.  
 A cable carrying *3* Ampères *18* feet from standard compass *9* feet from steering compass.  
 A cable carrying *30* Ampères *14* feet from standard compass *8* 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 *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.

*J. Teuchap* Builder's Signature. Date *1<sup>st</sup> Aug 1930*

Is this installation a duplicate of a previous case *yes*. If so, state name of vessel *"HIKAWA MARU"*

General Remarks (State quality of workmanship, opinions as to class, &c.)

*The Electrical Installation of this vessel has been installed on board under special survey in accordance with the Rules. Materials & workmanship good. On completion of installing all generators & insulation tried under full working conditions with satisfactory results. Insulation & resistance tests carried out with satisfactory results.*

*It is submitted that this vessel is fit for service. THE PRECOB. Blue light. 8/9/30.*

Total Capacity of Generators *1155* Kilowatts.

The amount of Fee ... *YEN 594.00* : { When applied for, *16-8-30*

Travelling Expenses (if any) £ : { When received, *10-9-30*

Committee's Minute

Assigned

*J. Micholas*  
 Surveyor to Lloyd's Register of Shipping.

1m.1223.—Transfer. (The Surveyors are requested not to write on or below the space for Committee's Minute.)



**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 Effective Area per Pole Sq. Ins.	No.	Diameter.	In Circuit.	Rule.			
Lighting "A" Deck	2	.100	19	.083	70.8	118	245	Rubber	Lead covered, Armoured & Braided
" " " " "B" "	2	.195	37	.083	77.8	184	150	"	" " "
" " " " "3rd Class"	2	.100	19	.083	54	118	80	"	" " "
" " " " "Crew"	2	.100	19	.083	61.5	118	50	"	" " "

**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 Effective Area per Pole Sq. Ins.	No.	Diameter.	In Circuit.	Rule.			
Wash deck pump	1	2	.100	19	.083	100	118	48	Rubber	Lead Covered, Armoured & Braided
Seawater aux. Cooling pump	2	2	.024	4	.064	39	46	48	"	" " "
Fuel oil pumps	3	2	.004	4	.036	23	24	40	"	" " "
Bilge pump (Boiler room)	1	2	.004	4	.036	21	24	32	"	" " "
Oil Burning pumps	1	2	.0031	1	.064	6.8	12.9	120	"	" " "
Condenser Circulating pump	1	2	.024	4	.064	39	46	124	"	" " "
CO <sub>2</sub> Compressors	2	2	.195	37	.083	180	184	20	"	" " "
Brine Circulating pump	3	2	.004	4	.036	22.6	24	26	"	" " "
Cooling water " "	3	2	.007	4	.036	22.6	24	90	"	" " "
Capstans	4	2	.605	91	.093	310	384	60	"	" " "
Life boat winches	4	2	.062	19	.064	31	83	210	"	" " "
Water tight door motor	1	2	.024	4	.064	24	46	260	"	" " "

*J. Nicholas*