

Rpt. 13.

No. 4520

**REPORT ON ELECTRIC FITTINGS.**

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

2 JUN 1930

Date of writing Report 8<sup>th</sup> May 1930. When handed in at Local Office 40/5/ 1930 Port of "YOKOHAMA"No. in Survey held at YOKOHAMA Date, First Survey 17/12/29 Last Survey 1<sup>st</sup> May 1930.  
Reg. Book. (Number of Visits... 20.)

on the Steel T. Sc. M. V. "HIKAWA MARU"

Tons { Gross 11,622  
Net 6,788

Built at Yokohama By whom built Yokohama Dock Co. Ltd Yard No. 177. When built 1930.

Owners Nippon Yusen Kaisha Port belonging to Tokio.

Electric Light Installation fitted by Yokohama Dock Co. Ltd Contract No. 177 When fitted 1930.

Is the Vessel fitted for carrying Petroleum in bulk No.

System of Distribution Two wire.

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.

Position of Generators Bottom platform port &amp; starboard side of 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 ✓ 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 ✓ 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.

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 ✓

and is the frame effectively earthed ✓. 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.

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 and for outgoing circuits, one D. Pole switch with Safety device.

Instruments on main switchboard 30 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 &amp; 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.



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010369-010377-0059 1/3



## LIGHTING AND HEATING CONDUCTORS.

DESCRIPTION.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAX. 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	Leadlined, Armoured & Braided
" B. Deck	2	.195	37	.083	77.8	184	150	"	" " "
" 3 <sup>rd</sup> 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 MAX. 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			
Washdeck Pump.	1	2	.100	19	.083	100	118	48	Rubber	Lead, Armoured & Braided
Sea Water Aux. Cooling Pump	2	2	.024	7	.064	39	46	48	"	"
FUEL OIL PUMPS	3	2	.007	7	.036	23	24	40	"	" " "
Bilge Pump (Border Room)	1	2	.007	7	.036	21	24	32	"	" " "
Oil Burning Pumps	1	2	.0031	1	.064	6.8	12.9	120	"	" " "
Condenser Circulating Pump	1	2	.024	7	.064	39	46	124	"	" " "
CO <sub>2</sub> Compressors	2	2	.195	37	.083	180	184	20	"	" " "
Brine Circulating Pump	3	2	.007	7	.036	22.6	24	26	"	" " "
Cooling Water " "	3	2	.007	7	.036	22.6	24	90	"	" " "
Caps & ans.	4	2	.605	91	.093	310	384	60	"	" " "
Life Boat Winches	4	2	.062	19	.064	31	83	210	"	" " "
Waterlight Door Motor	1	2	.024	7	.064	24	46	260	"	" " "

J. Michalos

Cables: Single, twin, concentric, or multicore single are the cables insulated and protected as per Tables IV or V of the Rules yesFall of Pressure, state maximum between bus bars and any point of the installation under maximum load 8Cable 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 yesPaper 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 yesCable 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 yesSupport and Protection of Cables, state how the cables are supported and protected metal clipsIf 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 yesRefrigerated Chambers, if lights are fitted, are the cables and fittings in accordance with the special requirements yesJoints in Cables, state if any, and how made, insulated, and protected ends of cable secured by screws in metal joint boxesWatertight Glands and Deck Tubes, are all cables passing through decks and watertight bulkheads provided with deck tubes or watertight glands yesBushes 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 LeadEarthing Connections, state what earthing connections are fitted and their respective sectional areas Rubber insulated wire .011 sq. in.are their connections made as per Rule yesAlternative 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

On board with charge and switch. Driven by a gasoline engine.Navigation Lamps, are these separately wired yes, controlled by separate switch and separate fuses yes, are the fuses double pole yesare the switches and fuses grouped in a position accessible only to the officers on watch yeshas each navigation lamp an automatic indicator as per Rule yesSecondary Batteries, are they constructed and fitted as per Rule yesFittings, are all fittings on weather decks, in stokeholds and engine rooms and wherever exposed to drip or condensed moisture, watertight yesare 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 guardsare 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 guards

how are the cables led

by steel tubeswhere are the controlling switches situated outside the spacesSearchlight Lamps, No. of Two, whether fixed or portable fixed, are their fittings as per Rule yesArc 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 yesare 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 yesare they protected from mechanical injury and damage from water, steam or oil yes are their axes of rotation fore and aft yesif 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 and fitted as per Rule yesLightning Conductors, where lightning conductors are required, are these fitted as per Rule yesShips 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.

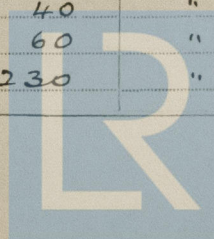
DESCRIPTION OF GENERATOR.	No. of	RATED AT				DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.	
		Kilowatts.	Volts.	Ampères.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN ...	3	325	225	1600	290	Diesel Engine	Heavy oil	above 150°F
AUXILIARY ...	1	40	225		400	"	"	"
EMERGENCY ...	1	35	225	155	1200	gasoline engine	gasoline	
ROTARY TRANSFORMER	1	225	20/40	56	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.	Rule.			
MAIN GENERATOR ...	13	4.96	61	.103	1600	1650	115	Rubber	Lead Covered & Braided
EQUALISER CONNECTIONS	1	4.05	61	.093	90	288	95	"	Lead Covered, Armoured & Braided
AUXILIARY GENERATOR ...	2	4.05	61	.093	178	288	100	"	" " "
EMERGENCY GENERATOR	2	1.95	37	.083	155	184	30	"	" " "
ROTARY TRANSFORMER { MOTOR	2	.007	4	.036	15.5	24	20	"	" " "
TRANSFORMER { GENERATOR	2	.022	4	.064	25	46	20	"	" " "
ENGINE ROOM ...	2	1.00	19	.083	96	118	40	"	" " "
AUXILIARY SWITCHBOARDS	4	2.48	37	.093	410	428	220	"	" " "
AUXILIARY SWITCHBOARDS A.	4	4.95	61	.103	562	664	260	"	" " "
" " B	2	.30	37	.103	181	240	320	"	" " "
" " C	2	1.00	19	.083	78	118	280	"	" " "
" " D	2	.062	19	.064	32	83	270	"	" " "
" " F	4	4.96	61	.103	1020	1080	740	Paper	" " "
" " G	4	4.05	61	.093	855	928	220	"	" " "
Accommodation " H	4	4.96	61	.103	1020	1080	500	"	" " "
" " I	4	4.05	61	.093	855	928	280	"	" " "
Emergency " "	2	4.05	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	"	" " "
DECK LIGHTS.	2	1.00	19	.083	61.5	118	50	"	" " "
ARC LAMPS	2	2.48	37	.093	165	214	240	"	" " "
HEATERS ...	2								

## 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.			
BALLAST PUMP ...	1	2	1.95	37	.083	148	184	68	Rubber	Lead Covered, Armoured & Braided.
MAIN BILGE LINE PUMPS	1	2	1.00	19	.083	107	118	90	"	" " "
GENERAL SERVICE PUMP										
EMERGENCY BILGE PUMP	1	2	.062	19	.064	80	83	350	"	" " "
SANITARY PUMP ...	2	2	1.00	19	.083	79	118	40	"	" " "
CIRC. SEA WATER PUMPS	4	2	1.25	37	.072	121	152	120	"	" " "
CIRC. FRESH WATER PUMPS	2	2	.0031	1	.064	3.5	12.9	36	"	" " "
AIR COMPRESSOR ...	1	2	1.218	37	.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	2.48	37	.093	189	214	155	"	" " "
OIL FUEL TRANSFER PUMP	2	2	1.00	19	.083	40	118	90	"	" " "
WINDLASS ...	1	2	1.605	91	.093	445	461	40	"	" " "
WINCHES, FORWARD	4	2	1.00	19	.083	108	118	460	"	" " "
	6	2	2.48	37	.103	222	240	90	"	" " "
WINCHES, AFT	4	2	1.00	19	.083	108	118	240	"	" " "
	5	2	2.48	37	.103	222	240	40	"	" " "
STEERING GEAR—										
(a) MOTOR GENERATOR										
(b) MAIN MOTOR	2	2	2.48	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	.036	12	24	300	"	" " "
" " "	9	2	.0031	1	.064	3	12.9	580	"	" " "
Emergency Air Compressor	1	2	1.95	37	.083	130	184	320	"	" " "
Fuel Oil Purifiers	2	2	.007	4	.036	15	46	40	"	" " "
h.b. " "	3	2	.0031	1	.064	8.7	12.9	60	"	" " "
" " Transfer Pump	1	2	.0031	1	.064	4	12.9	230	"	" " "



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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.

R. Miyake

Electrical Engineers.

Date 3<sup>rd</sup> May 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. Teuchiya

Builder's Signature.

Date 3<sup>rd</sup> May 1930

Is this installation a duplicate of a previous case 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 Rules. Materials and workmanship good. On completion of installing all generators & installation tried under full working conditions with satisfactory results. Insulation tests etc. carried out and all found in order.

It is submitted that  
this vessel is eligible for  
THE RECORD.

Elec. Dept

W. H. 4/6/30

Total Capacity of Generators 1155 Kilowatts.

The amount of Fee ... YEN 594.00 : When applied for, 9/5/1930

Travelling Expenses (if any) £ : : When received, 2/5/30

J. Michalos  
Surveyor to Lloyd's Register of Shipping.

Committee's Minute

Assigned

Elec. Dept



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