

# REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office 24 FEB 1933

Date of writing Report 26th Jan 1933 When handed in at Local Office 26th Jan. 1933 Port of NAGASAKI.

No. in Survey held at NAGASAKI. Date, First Survey 1st Aug. 1932 Last Survey 16th Jan. 1933  
Reg. Book. (Number of Visits 11)68165 on the Steel Twin Screw Motor Vessel "NANKAI MARU". Tons { Gross 8416.19  
Net 5114.29

Built at Nagasaki. By whom built Mitsubishi Zosen Kaisha Yard No. 501 When built 1933

Owners Osaka Shosen Kabushiki Kaisha. Port belonging to Osaka.

Electric Light Installation fitted by Mitsubishi Zosen Kaisha, Ltd. Contract No. / When fitted 1933

System of Distribution Two wire system.

Pressure of supply for Lighting 225 volts, Heating / volts, Power 225 volts.

Direct or Alternating Current, Lighting Direct current Power 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 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 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 / 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 At forward end of Machinery Space.

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 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, 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 A double pole circuit breaker with overload trip time-lag device and reverse current trip &amp; single pole equalizer switch interlocked with the circuit breaker as per rule and a double pole knife switch for each of 200 K.W. Generators: A double pole circuit breaker with overload trip, time-lag device or a double pole switch and fuse for each of out going circuit.

Instruments on main switchboard 6 ammeters 2 voltmeters 1 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 Lamp.

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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Lloyd's Register  
Foundation

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**Cables:** Single, twin, concentric, or multicore Twin 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 7.9 volts for Lighting.  
9.75 volts for Power.

**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 Clamped to metal bracket or perforated galvanized steel plate by metal clip and protected by metal cover or pipe where necessary.

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,** 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 In junction box as per Rule.

**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 There is no earthing connections except the wireless telegraph, sectional area ~~xxxxxxx~~ 0.007 square inches.

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 /

**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 Lamps in stores are protected by strong metal 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 / , how are the cables led

where are the controlling switches situated /

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

**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 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 Totally enclosed.

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 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.	Amps.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN	3	200	225	888	340	Diesel Engine	Deisel Oil	Above 150° F
AUXILIARY								
EMERGENCY								
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								
	EQUALISER CONNECTIONS								
	AUXILIARY GENERATOR								
	EMERGENCY GENERATOR								
	ROTARY TRANSFORMER								
	AUXILIARY SWITCHBOARDS								
	ENGINE ROOM								
	BOILER ROOM								
	ACCOMMODATION								
	WIRELESS								
	SEARCHLIGHT								
	MASTHEAD LIGHT								
	SIDE LIGHTS								
	COMPASS LIGHTS								
	POOP LIGHTS								
	CARGO LIGHTS								
	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								
	MAIN BILGE LINE PUMPS								
	GENERAL SERVICE PUMP								
	EMERGENCY BILGE PUMP								
	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								
	VENTILATING FANS								

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.

*S. Motora*  
GENERAL MANAGER, Electrical Engineers. Date JAN 3 01933

**COMPASSES.**

Distance between electric generators or motors and standard compass 15 feet from Gyro pilot motor.  
Distance between electric generators or motors and steering compass 2 feet 3 inches from Gyro pilot motor.  
The nearest cables to the compasses are as follows:—  
A cable carrying 0.1 Ampères 1 feet from standard compass 1 feet from steering compass.  
A cable carrying 3 Ampères 15 feet from standard compass 2.2 feet from 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 Any and Every course in the case of the standard compass, and About 10 degrees on Easterly or Westerly course in the case of the steering compass. due to Gyro pilot motor.

*S. Motora*  
GENERAL MANAGER, Builder's Signature. Date JAN 3 01933

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 materials and workmanship are good and the installation has been fitted in accordance with the Rules, tested under full working conditions and found satisfactory.  
Plans sent under separate cover of:- Wiring Diagram of Power, & Wiring Diagram of Lighting and Cabin Fan.

It is submitted that this vessel is eligible for THE RECORD.  
*See light*  
*JA 27/1/33*

Total Capacity of Generators 600 Kilowatts.

The amount of Fee ... £ 760:00 : 16. 1. 33  
When applied for, 16. 1. 33  
When received, 16. 1. 33  
Travelling Expenses (if any) £ /

*H.D. Buchanan & T. Kumishu*  
Surveyor to Lloyd's Register of Shipping.

Committee's Minute  
Assigned *Elec. Lt.*

Ref. No.	Description.	No. of Conds.	Effective area of each con. sq. in.	Composition of strand		Total Maximum current amperes	Approximate length L&R ft.	Insulated with	How Protected
				No.	Dia.				
1	No.1 Dynamo	4	.75	91	.103	888	170	Rubber	L.C.A.
2	Equalizer for above	1	"	"	"	"	85	"	"
3	Magnet clutch	2	.007	7	.036	2.5	170	"	"
4	No.2 Fuse board	4	.5	61	.103	1500	300	Paper	L.C.A.B.
5	No.1 " "	2	"	"	"	720	184	"	"
6	Windlass motor	2	.3	37	"	266	300	Rubber	"
7	No.1, 5 ton winch	2	.2	"	.083	179	75	"	"
8	No.10, 3 ton "	2	.12	"	.064	130	176	"	L.C.
9	No.3 Fuse board	4	.5	61	.103	1222	345	Paper	L.C.A.B.
10	No.4 " "	2	"	"	"	602	180	"	"
11	No.12, 3 ton winch	2	.12	37	.064	130	75	Rubber	L.C.
12	No.19 mooring winch	2	.25	"	.093	222	70	"	"
13	Aux. switchboard	2	.4	61	"	332.4	157	"	L.C.A.
14	No.2 Ref. compressor	2	.12	37	.064	123	40	"	"
15	No.2 brine pump motor	2	.007	7	.036	17.5	115	"	"
16	No.1 cooling pump motor	2	"	"	"	12.2	"	"	"
17	Cooling air circula fan	2	"	"	"	13.5	200	"	"
18	Steer. motor starter	2	.12	37	.064	60	105	"	"
19	Steering motor	2	.04	19	.052	"	700	"	"
20	Junct. box for cook. fan.	2	.007	7	.036	9	250	"	"
21	No.2 cooking fan motor	2	"	"	"	4.5	10	"	"
22	Wireless switchboard	2	.0145	"	.052	17	185	"	"
23	Second. batt. for Wl. tel.	2	.007	"	.036	19	96	"	"
24	Motor side for 2 KVA M.G.	3	"	"	"	17	110	"	L.C.
25	Generator side "	3	"	"	"	10	"	"	"
26	Motor side for 1/2 KVA M.G.	3	"	"	"	19	"	"	"
27	Generator side "	3	"	"	"	2.5	"	"	"
28	Gyro comp. control panel	2	"	"	"	6	250	"	L.C.A.
29	Second Batt. for Gyro comp.	2	"	"	"	18	30	"	"
30	M. side for MG of Gyro comp.	4C	.003	1	.064	6	40	"	L.C.
31	A.C. generator side "	"	"	"	"	3	"	"	"
32	D.C. " "	"	"	"	"	6.3	"	"	"
33	No.1 J & P. cooling pump	2	.75	91	.103	373	165	"	L.C.A.
34	No.1 lub. oil pump	2	.12	37	.064	128	130	"	"
35	No.1 M.E. turning motor	2	.0225	7	"	42	400	"	"
36	Bilge ballast pump.	2	.12	37	"	95	200	"	"
37	General service & fire pump	2	"	"	"	"	230	"	"
38	Bilge sanitary pump	2	.0145	7	.052	31	200	"	"
39	No.1 fuel oil shift pump	2	.12	37	.064	86	"	"	"
40	Junct. box for L.O. shift pump	2	.007	7	.036	14.6	130	"	"
41	Lub. oil shift pump	2	"	"	"	7.3	40	"	"
42	F.O. drain shift pump	2	"	"	"	"	60	"	"
43	Work shop motor	2	"	"	"	22	230	"	"
44	No.1 fuel oil purifier	2	"	"	"	13.1	75	"	"
45	Junct. box for L.O. purifier	2	"	"	"	16	215	"	"
46	No.1 lub. oil purifier	2	"	"	"	8	50	"	"
47	No. E. Rm. vent fan motor	2	.0145	"	.052	29	400	"	"
48	Junct. box for oil burn.	2	.007	"	.036	25.5	240	"	"
49	Oil burning fan motor	2	"	"	"	13.75	30	"	"
50	Oil burning heater	2	"	"	"	11.8	"	"	"
51	No.1 submain board	2	.0145	"	.052	23.53	162	"	"
52	No.1 distribution board	2C	.003	1	.064	4.45	116	"	"
53	No.2 " "	"	"	"	"	7.44	"	"	"
54	No.3 " "	"	"	"	"	6.33	20	"	"
55	No.4 " "	"	"	"	"	5.31	"	"	"
56	No.2 submainboard	2	.007	7	.036	14.3	162	"	"
57	No.5 Distribution board	2C	.003	1	.064	7.54	140	"	"
58	No.6 " "	"	"	"	"	6.76	20	"	"
59	No.3 submainboard	2	.007	7	.036	17.4	80	"	"
60	No.7 distribution board	2C	.003	1	.064	4.45	20	"	"
61	No.8 " "	"	"	"	"	5.64	"	"	"
62	No.9 " "	"	"	"	"	6.95	"	"	"
63	Socket for Eng. Rm. Cargo Lamp.	"	"	"	"	8.36	120	"	L.C.A.
64	Flex. cord for 300 W. cargo Lamp	"	.00475	168	.006	"	80	"	H.B.F.C.
65	Bus-bar lamp circuit	"	.00181	1	.048	0.82	120	"	L.C.A.
66	No.4 submainboard	2	.007	7	.036	16.42	250	"	L.C.A.B.
67	Cargo lamp circuit	2C	.00181	1	.048	3.63	150	"	"
68	Flex. cord for cargo lamp	"	.00475	168	.006	1.36	80	"	H.B.F.C.
69	Flex. cord for cargo cluster	"	"	"	"	1.09	"	"	"
70	Cargo lamp circuit	"	.00181	1	.048	5	150	"	L.C.A.B.
71	Flex. cord for pendant lamp.	"	.00171	61	.006	0.09	50	"	H.B.F.C.
72	No.5 submainboard	2	.007	7	.036	17.42	220	"	L.C.A.B.
73	Cargo lamp circuit	2C	.00181	1	.048	5	40	"	"
74	" " "	"	"	"	"	"	"	"	"
75	" " "	"	"	"	"	3.63	150	"	"
76	Navigation lamp circuit	2	.007	7	.036	0.91	224	"	L.C.A.
77	Fore mast lamp	3C	.003	1	.064	0.27	620	"	L.C.A.B.
78	Main mast lamp	"	"	"	"	"	700	"	"
79	Side lamp	"	"	"	"	"	120	"	"
80	Stern lamp	"	"	"	"	"	740	"	"
81	Cabin fan circuit	2	.007	7	.036	6.44	80	"	L.C.A.
82	Battery lamp circuit	"	"	"	"	6.25	60	"	"

L.C.A. - Lead covered armoured.  
L.C.A.B. - Lead covered armoured & braided.  
H.B.F.C. - Hemp bridged flexible cord.