

REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office 22 Feb 1926

Date of writing Report 6th Jan. 1926 When handed in at Local Office 6th Jan. 1926 Port of NAGASAKI.

No. in Survey held at NAGASAKI. Date, First Survey 1st Aug. 25. Last Survey 8th Dec. 1925.
Reg. Book. (Number of Visits 12)

on the Steel Twin Screw Motor Vessel "SANTOS MARU".

Tons { Gross 7,266.96
Net 4,386.85

Built at Nagasaki. By whom built Mitsubishi Zosen Kaisha Yard No. 410, When built 1925.

Owners Osaka Shosen Kabushiki Kaisha. Port belonging to Osaka.

Electric Light Installation fitted by Mitsubishi Zosen Kaisha, Ltd., Contract No. K 3956 When fitted 1925.

System of Distribution Two wire, lead and return. ✓

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 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, except 3.5 KW, 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 In machinery space.

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

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 Fore end of Machinery Space at level of 2nd Deck.

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 In same compartment. ✓

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 No semi insulating material ✓, and is the frame effectively earthed Yes ✓

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 For each generator of 37.5 KW & 150 KW, a double pole circuit breaker with overload and reversed current trips, and a single pole equalizer switch interlocked with circuit breaker as per Rules, and enclosed fuse and knife switch on each pole: for 3.5 KW generator, a single pole overload circuit breaker and a double pole knife switch & fuse: for each out-going circuit, a fuse on each pole and a double pole knife switch.
Instruments on main switchboard 8 ammeters 3 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 By lamps.

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 ✓



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Lloyd's Register
Foundation

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

Insulation
Fall of
Cable S
Paper I
insulating
Cable I
steam p
Support
galva
If cables
separate
Refrige
Joints
prot
Watert
With
Bushes
bushed
Earthen
graph
Altern
Emerg
Gene
Naviga
are the
has each
are separ
Fitting
are any
are
are any
where
Search
Arc La
Motors
are the
inflamm
are they
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Tota
enc
Contre
Lightn
Ships
section
If port

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.

NAGASAKI WORKS, MITSUBISHI ZOSEN KAISHA, LTD.
GENERAL MANAGER

Electrical Engineers.

Date 20 JAN 1926

COMPASSES.

Distance between electric generators or motors and standard compass About 10 ft. from Gyro-pilot motor.

Distance between electric generators or motors and steering compass About 3 ft. from Gyro-pilot motor.

The nearest cables to the compasses are as follows :-

A cable carrying 0.1 Amperes One feet from standard compass. One feet from steering compass. (For Compass Lamp)

A cable carrying 1.0 Amperes Twelve feet from standard compass. Three feet from steering compass. (For Gyro-pilot motor)

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. 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 No degrees on Any and every course in the case of the standard compass, and About 18 degrees on Westerly or Easterly course in the case of the steering compass.

NAGASAKI WORKS, MITSUBISHI ZOSEN KAISHA, LTD.

Builder's Signature.

Date 20 JAN 1926

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, etc. The Materials and workmanship are good)

and the installation has been fitted in accordance with the Rules, tested under full load

and found satisfactory, and it is my opinion that the vessel be given the highest class.

Plans sent under separate cover of:- "Load Distribution Diagram", & "Connection Diagram on Main Switchboard".

Also Certificates of 2- 140 HP Motors, 3- 150 KW Generators, 2- Blower Impellers & 2 Motor

Armatures. other certificates retained for further reference in the Installation of Nos.

411 & 412.

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

24/1/26

Total Capacity of Generators 491. Kilowatts

The amount of Fee ... £ 743.90 : 10. 12 1925

Travelling Expenses (if any) £ : 17. 12 1925

Committee's Minute FRI. 26 FEB 1926

Assigned

Elec. Light

Rpt. 9a.

Port of NAGASAKI. (1) Continuation of Report No. 1514 dated 6th January, 26. on the

Steel Twin Screw Motor Vessel "SANTOS MARU".
Generator, Lighting, Heating Conductors.

Ref.No.	Description.	Effective No. of each set. cond. sq. in.	Area of of Strand. No. Dia.	Composition No. Dia.	Total Max. Current Amps.	Approx Length th. Lead Return.	Insula- ted with.	How Protec- ted.	Re- marks
1.2.3.	Main generator	3	.605x2	91x2	.092"	666 each	130'	Rubber	L.A.W.
4	Aux. "	1	.186	37	.08"	166	"	"	"
5	Emergency generator	1	.00715	7	.036"	15.6	"	"	"
13	Fuse board foreward	1	.405	61	.092"	240	400'	"	"
16	Fuse box mid winch	1	.119	37	.064"	80	200'	"	"
22	Fuse board aft.	1	.186	37	.08"	160	420'	"	"
25	Cooking fan switch	1	.00715	7	.036"	9.4	100'	"	"
27	Baggage lift switch	1	.00715	7	.036"	5.1	20'	"	"
31	Junction box ord. fan	1	.0127	7	.048"	30.6	160	"	"
35	Cut out Elec.Iron.	1	.00715	7	.036"	9	40'	"	"
38	Junction box laundry motor	1	.0225	7	.064"	41	580'	"	"
45	Junction box ref.motor	1	.605	91	.092"	289	67'	"	"
57	Junction box oil pump	1	.0225	7	.064"	26.1	80'	"	"
67	Aux. switch board	1	.605	91	.092"	350	110'	"	"
77	" " "	"	"	"	"	"	"	"	"
79.80	Fore cargo lamp	2	.0047	168	.006"	1 each	100'	"	F.C.
81	Socket for above	2	.00322	1	.064"	2	40'	"	L.A.W.
82.83.84	Fore cargo lamp	3	.0047	168	.006"	2.3	100'	"	F.C.
85	Socket for above	3	.00322	1	.064"	4.3	60'	"	L.A.W.
86.87	Midship cargo lamp	2	.0047	168	.006"	1 each	100'	"	F.C.
88	Socket for above	2	.00322	1	.064"	2	250'	"	L.A.W.
89	Submain board S 6.	1	.00715	7	.036"	8.3	380'	"	"
90.91	Aft. cargo lamp	2	.0047	168	.006"	1 each	100'	"	F.C.
92	Socket for above	2	.00322	1	.064"	2 each	45'	"	L.A.W.
93.94.95	Aft. cargo lamp	3	.0047	168	.006"	2.3	100'	"	F.C.
96	Socket for above	3	.00322	1	.064"	4.3	45'	"	L.A.W.
97	Submain board S 7.	1	.00715	7	.036"	6.3	370'	"	"
98.99	1 KW. elect heater social hall.	2	.00322	1	.064"	4.5 each	50'	"	L.W.
100.101	1.5 KW.elect heater social hall.	2	.00322	1	.064"	6.8	125'	"	"
102	Submain board S 10.	1	.0127	7	.048"	22.7	100'	"	L.A.W.
103	2 KW. elect heater smoke room.	1	.00322	1	.064"	9.1	60'	"	L.W.
104.105	1.5 KW. elect heater smoke room.	2	.00322	1	.064"	6.8	110'	"	"
106	Submain board S 11.	1	.0127	7	.048"	22.7	270'	"	L.A.W.
107	Distributing board # 1	1	.00322	1	.064"	6.8	20'	"	"
108	" " " No.2	1	"	1	"	7.4	200'	"	"
109	" " " 3	1	"	1	"	3.1	20'	"	"
110	" " " 4	1	"	1	"	7.8	20'	"	"
111	" " " 5	1	"	1	"	4.25	40'	"	"
112	" " " 6	1	"	1	"	5.1	20'	"	"
113	Submain board No.S 1	1	.0225	7	.064"	32.05	125'	"	"
114	Distributing board # 7	1	.00322	1	.064"	2.25	100'	"	"
115	" " " No.8	1	"	1	.064"	6.25	20'	"	"
116	" " " 9	1	"	1	"	9	210'	"	"
117	" " " 10	1	.00715	7	.036"	11.25	325'	"	"
118	" " " 11	1	.00322	1	.064"	6.9	200'	"	"
119	Submain board No.S 2.	1	.0225	7	.064"	28.75	210'	"	"
120	Distributing board #12	1	.00322	1	.064"	6	270'	"	"
121	" " " No.13	1	"	1	"	4.95	80'	"	"
122	" " " 14	1	"	1	"	4.5	20'	"	"
123	" " " 15	1	"	1	"	7.7	110'	"	"
124	" " " 16	1	"	1	"	3.2	460'	"	"
125	" " " 17	1	"	1	"	4.95	500'	"	"
126	Submain board No.S 3.	1	.0225	7	"	31.3	110'	"	"
127	Distributing board # 18	1	.00322	1	"	4.2	70'	"	"
128	" " " No.19	1	"	1	"	7.5	170'	"	"
129	" " " 20	1	"	1	"	4.85	20'	"	"
130	Submain board No.S 4.	1	.00715	7	.036"	16.55	140'	"	"
131	Distributing board # 21	1	.00322	1	.064"	4.6	20'	"	"
132	" " " No.22	1	"	1	.064"	6.85	20'	"	"
133	500 watt lamp socket	1	"	1	"	2.25	125'	"	"
134	500 watt lamp	1	.0047	168	.006"	2.25	100'	"	F.C.
135	Submain board No.S 5	1	.00715	7	.036"	13.7	40'	"	L.A.W.
136	Navigation Sig.Indicator	1	.00322	1	.064"	2.5	325'	"	"
137	Distributing board # 23	1	"	1	"	4.2	20'	"	"
138	Cut out	1	"	1	"	1.5	215'	"	"
139	Distributing board # 24	1	"	1	"	4	20'	"	"
140	Submain board No.S 8	1	.00715	7	.036"	9.7	60'	"	"
141	Distributing board # 25	1	.00322	1	.064"	4.3	400'	"	"
142	" " " No.26	1	"	1	"	4.2	360'	"	"
143	" " " 27	1	"	1	"	4.4	140'	"	"
144	" " " 28	1	"	1	"	4.4	20'	"	"
145	Submain board No.S 9	1	.0225	7	"	27	110'	"	"
Equalizer	150 KW. generator	3	.605	91	.092"	65	"	"	"
"	37.5 KW. generator	1	.186	37	.08"	65	"	"	"

L.A.W. = Lead covered & armoured copper wire.
F.C. = Flexible Cord.
L.W. = Lead covered copper wire.

Steel Twin Screw Motor Vessel "SANTOS MARU".
Motor Conductors.

Ref. No.	Discription.	No. of Motor	Effective Area of each cond. Sq. In.	Composition of Strand. No.	Dia.	Total Max. current Amps	Approx. length. Lead & Return ft.	Insula-tes with	How protec-ted.	Re-marks.
6	Windlass	1	.406 ✓	61	.092"	216	140'	Rubber	L.A.W.	
7-12	Winches foreward	6	.119 ✓	37	.064"	80	65'	"	"	
14.15	" midship	2	.119 ✓	37	"	80	30'	"	"	
17.20	" Aft.	4	.119 ✓	37	"	80	55'	"	"	
21	Warping winch	1	.119 ✓	37	"	130	120'	"	"	
28-30	Ventilator fan	3	.00715 ✓	7	.036"	8.5	180'	"	"	
26	Baggage lift	1	" ✓	7	"	5.1	12'	"	"	
23.24	Cooking range fan	2	" ✓	7	"	4.7	23'	"	"	
37	Washing machine	1	" ✓	7	"	12.7	23'	"	"	
36	Hydroextractor	1	" ✓	7	"	20	8'	"	"	
32-34	Electric iron	3	.00322 ✓	1	.064"	9	10'	"	"	
39.40	Steering engine	2	.119 ✓	37	"	97	350'	"	"	
41.42	Ref. Machine	2	.186 ✓	37	.08"	124	12'	"	"	
43.44	Brine pump	2	.00715 ✓	7	.036"	20.5	12'	"	"	
46	Gyro pilot	1	.00322 ✓	1	.064"	1.35	250'	"	"	
46	Gyro compass	1	.00715 ✓	7	.036"	4	130'	"	"	
47	Wireless telegraph	1	" ✓	7	"	20	240'	"	"	750 Amp (Max. in service)
48.49	Turbo blower	2	.605x2 ✓	91x2	.092"	845*	35'	"	"	
50.51	Aux. air comp.	2	.405x2 ✓	61x2	"	515	55'	"	"	
52	Work shop motor	1	.00715 ✓	7	.036"	21.5	70'	"	"	
53.54	Oil pump	2	" ✓	7	"	4.78	20'	"	"	
55.56	Oil purifier	2	" ✓	7	"	8.35	20'	"	"	
58.68	Jacket cool water pump	2	.119 ✓	37	.064"	86	90'	"	"	
59.69	Piston cool water pump	2	.0344 ✓	19	.048"	58	85'	"	"	
60.70	Bilge pump	2	.0127 ✓	7	.048"	27.4	35'	"	"	
61.71	Lub. oil pump	2	" ✓	7	"	35	85'	"	"	
62.72	Fuel oil pump	2	.00715 ✓	7	.036"	16	110'	"	"	
63	Ballast pump	1	.119 ✓	37	.064"	134	50'	"	"	
64	Cold sanitary pump	1	.0344 ✓	19	.048"	56	50'	"	"	
65	Aux.Eng.jacket C.W.P.	1	.00715 ✓	7	.036"	14.2	90'	"	"	
66	Lub. oil purifier	1	" ✓	7	"	8	95'	"	"	
73	General serv. pump	1	.186 ✓	37	.08"	152	40'	"	"	
74	Hot sanitary pump	1	.0225 ✓	7	.064"	36	40'	"	"	
75	Fresh water pump	1	.00715 ✓	7	.036"	12.7	140'	"	"	
76	Aux.Eng.Lub.oil pump	1	" ✓	7	"	16	95'	"	"	
78	Motor siren	1	.0127 ✓	7	.048"	32	430'	"	"	

Revised