Rpt. 13.

No 2176

REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

-9 NOV 1936

Received at London Office.....

Date of writing Report 2nd Oct 1936 When handed in at Local Office 2nd Oct 1936 Port of NAGASAKI.

No. in Reg. Book. 87208 Survey held at NAGASAKI. Date, First Survey 9th July Last Survey 9th Sept 1936 (Number of Visits 8)

on the Steel Single Screw Motor Vessel "AKAGI MARU" Tons Gross 7386.83 Net 4329.02

Built at Nagasaki By whom built Mitsubishi J.K.K. Yard No. 627 When built 1936

Owners Nippon Yusen Kabushiki Kaisha Port belonging to Tokio.

Electric Light Installation fitted by Mitsubishi Jukogyo K.K.Nagasaki, Contract No. - When fitted 1936

Is the Vessel fitted for carrying Petroleum in bulk No

System of Distribution Two wire system.

Pressure *of supply for* **Lighting** 220 / *volts,* **Heating** / *volts,* **Power** 220 ✓ *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(excepted Aux.Gen) *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 Main 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* Fore Bulkhead in Main Engine room. ✓

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 knife switch and a double pole circuit breaker with overload release, reverse current trip and time lag device and a single pole equalizer switch interlocked with the circuit breaker as per rule for each of 220 KW Main dynamo, a d.p.knife switch and a d.p. circuit breaker with overload release, reverse current trip and time-lag device for auxiliary dynamo, & d.p.knife switch and d.p.fuse or double pole circuit breaker for each of out going circuits.

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* Lamps with fuses and switches.

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 & Multicore *are the cables insulated and protected as per Tables* IV, V, XI *or* XIII *of the Rules* Yes

Fall of Pressure, *state maximum between bus bars and any point of the installation under maximum load* 11.16 volts for power. 5.61 volts for lighting.

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 on perforated or unperforated steel plates by metal clips and protected by metal covers or steel pipes 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* By junction box as per Rule.

Watertight Glands and Deck Tubes, *are all cables passing through decks and watertight bulkheads provided with deck tubes* & *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 connection except for the wireless telegraph, sectional area of which is 25,60 square milimeter.

, *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* 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* Lamps in stores are protected by strong metal guards, over heavy glass, air tight, bowls.

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 4 projectors (1 Suez canal type searchlight), *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 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* /, *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* 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 Kilowatts.	Volts.	Ampères.	Revs. per Min.	DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE. Fuel Used.	Flash Point of Fuel.
Main	3	220	225	978	360	Diesel Engine	Diesel Oil	F.P.above 150° F.
Auxiliary ...	1	30	"	133	650	" "	"	" " F.
Emergency ...								
Rotary Transformer	2	5 K.V.A.	250	20	2400	D.C.Motor 8HP 220V. 33A. 2400 RMP.		
	1	½ "	100	2.5	3333	" " 0.45 HP 30V 18A 3333 RMP.		

GENERATOR, LIGHTING AND HEATING CONDUCTORS.

DESCRIPTION.	CONDUCTORS. No. per Pole.	CONDUCTORS. Total Effective Area per Pole Sq. Ins.	COMPOSITION OF STRAND. No.	COMPOSITION OF STRAND. Diameter.	TOTAL MAXIMUM CURRENT. AMPERES. In Circuit.	TOTAL MAXIMUM CURRENT. AMPERES. Rule.	Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
Main Generator									
Equaliser Connections ...			SEE SEPARATE LIST.						
Auxiliary Generator									
Emergency Generator ...									
Rotary Transformer { Motor ...									
Rotary Transformer { Generator ...									
Engine Room									
Boiler Room									
Auxiliary Switchboards ...									
Accommodation									
Wireless									
Searchlight									
Masthead Light									
Side Lights									
Compass Lights									
Poop Lights									
Cargo Lights									
Arc Lamps									
Heaters									

MOTOR CONDUCTORS.

DESCRIPTION.	No. of Motors.	CONDUCTORS. No. Per Pole.	CONDUCTORS. Total Effective Area per Pole Sq. Ins.	COMPOSITION OF STRAND. No.	COMPOSITION OF STRAND. Diameter.	TOTAL MAXIMUM CURRENT. AMPERES. In Circuit.	TOTAL MAXIMUM CURRENT. AMPERES. Rule.	Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
Ballast Pump										
Main Bilge Line Pumps ...										
General Service Pump ...			SEE SEPARATE LIST.							
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.

NAGASAKI WORKS, MITSUBISHI JUKOGYO KABUSHIKI KAISHA.
K. Shimidzu
for GENERAL MANAGER.

Electrical Engineers. Date OCT 19 1936

COMPASSES.

Distance between electric generators or motors and standard compass 5 meters from 1/8 HP fire detector exhaust fan motor.

Distance between electric generators or motors and steering compass 7 " " " " " " "

The nearest cables to the compasses are as follows :—

A cable carrying 0.06 *Ampères* 0.3 meter *feet from standard compass* 0.3 meter *feet from steering compass.*

A cable carrying - *Ampères* - *feet from standard compass* - *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* Nil *degrees on* Any and every *course in the case of the steering compass.*

NAGASAKI WORKS, MITSUBISHI JUKOGYO KABUSHIKI KAISHA.
K. Shimidzu
for GENERAL MANAGER.

Builder's Signature. Date OCT 19 1936

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.

This installation has been constructed under Special survey in accordance with the Rules and approved plans, and the meterials and workmanship are good.

Full load, overload and perallel running tests have been carried out with satisfactory results.

All motors and lighting circuits have been tried under full working condition and found satisfactory.

This case is eligible in our opinion to have the notation of "Electric lights and Wireless" in the Register Book.

Plans sent under separate cover of:- Wiring diagram of Power, Lighting & Cabin fan,

Total Capacity of Generators 690 *Kilowatts.*

The amount of Fee ... ... £62-5-0 : When applied for, 21.9.1936 : When received. 26.11.1936

Travelling Expenses (if any) £ : :

For T. Kunishi + self H.D. Buchanan
Surveyor to Lloyd's Register of Shipping.

Committee's Minute FRI. 13 NOV 1936

Assigned See Nag. S.E. 2176

2m.3.31.—Transfer
The Surveyors are requested not to write on or below the space for Committee's Minute.

Rpt. 9a.

Port of NAGASAKI. *Continuation of Report No.* 217 *dated* 2nd October 1936 *on the*

GENERATOR, LIGHTING AND HEATING CONDUCTORS.

Ref. No.	DESCRIPTION.	CONDUCTORS. No. per Pole.	CONDUCTORS. Total Effective Area per Pole Sq.in.	COMPOSITION OF STRAND. No.	COMPOSITION OF STRAND. Diameter.	TOTAL MAXIMUM CURRENT. AMPERES. In Circuit.	TOTAL MAXIMUM CURRENT. AMPERES. Rule.	Approximate Length. (Lead and Return.) Feet.	Insulated with	HOW PROTECTED.
1	P & J Cool.water pump.	1	480.00	91	2.60	410	461.0	60	Rubber	Lead covered & braided.
2	Sea wayer circulat.Pump	1	321.00	61	"	302	332.0	30	"	Lead covered & armeured&Braided
3	Lub.oil pump	1	65.00	19	2.10	109	118.0	80	"	"
4	Fuel oil transfer pump	1	38.70	19	1.63	78	83.0	65	"	"
5	Eng.room vent fan.	1	9.45	7	1.30	27.5	37.0	12	"	"
6	" " " "	1	"	7	"	"	"	95	"	"
7	Bilge"& ballast pump	1	65.00	19	2.10	102	118.0	68	"	"
8	Fire & G.S.pump	1	"	"	"	"	"	66	"	"
9	Cargo oil pump	1	"	"	"	"	"	72	"	"
10	Bilge pump	1	9.45	7	1.30	31	37.0	60	"	"
11	Work shop motor	1	4.52	7	0.91	11.2	24.0	68	"	"
12	Main engine turning motor	1	25.60	19	1.30	59	64.0	90	"	"
13	No.1 fuse box	1	14.25	7	1.63	22.07	46.0	60	"	"
14	Lub.oil purifier	1	4.52	7	0.91	12.97	24.0	10	"	"
15	Fuel oil purifier	1	"	7	"	9.1	"	18	"	"
16	No.2 fuse box	1	9.45	7	1.30	28	37.0	60	"	"
17	Fuel oil service pump	1	4.52	7	0.91	14	24.0	20	"	"
18	No.3 fuse box	1	9.45	7	1.30	29.6	37.0	60	"	"
19	Fresh water pump	1	4.52	7	0.91	14.8	24.0	34	"	"
20	Boiler tube clanner	1	"	7	"	9	"	20	"	"
21	Hoist and travelling crane	1	14.25	7	1.63	40	46.0	28.	"	"
22	Main dynamo	2	1092.00	127	2.35	978	1024.0	58	"	L.C.& B.
23	Auxiliary dynamo	1	95.40	37	1.85	133	152.0	58	"	L.C.A & B.
24	No.1 fuse board	1	262.00	61	2.35	657	663.0	78	Paper	"
25	Windlass main	1	391.00	91	"	378.6	499.0	48	Rubber	"
26	" motor	1	262.00	61	"	340	357.0	12	"	"
27	" Mot-Gen.(Motor)	1	195.00	37	2.60	185	283.0	10	"	"
28	" " (Gen)	1	262.00	61	2.35	340	357.0	10	"	"
29	5 ton cargo winch	1	159.00	37	"	222	244.0	16	"	"
30	No.2 fuse board	2	524.00	61	"	1232	1326.0	90	Paper	"
31	3 ton Cargo winch	1	75.30	37	1.63	130	138.0	64	Rubber	"
32	No.3 fuse board	2	318.00	37	2.35	903	906.0	100	Paper	"
33	3 ton Cargo winch	1	75.30	37	1.63	130	138.0	22	Rubber	"
34	No.4 fuse board	1	195.00	37	2.60	520	523.0	68	Paper	"
35	5 ton cargo winch	1	159.00	37	2.35	222	244.0	16	Rubber	"
36	3 ton cargo winch	1	75.30	37	1.63	130	138.0	16	"	"
37	Mooring winch	1	159.00	37	2.35	222	244.0	14	"	"
38	" "	1	"	"	"	"	"	64	"	"
39	Steering motor	1	65.00	19	2.10	100	124.0	4	"	"
40	Steering motor-generator	1	75.30	37	1.63	132	138.0	8	"	"
41	" " " "	1	"	"	"	"	"	42	"	"
		1	65.00	19	2.10	100	124.0	154	"	"
		1	75.30	37	1.63	132	138.0	154	"	"
42	" Motor	1	65.00	19	2.10	100	124.0	14	"	"
		1	75.00	37	1.63	132	138.0	14	"	"
43	Motor-Gen.for Helm Indicator	1	4.52	7	0.91	1.33	24.0	10	"	"
44	Aux.switch board	1	321.00	61	2.60	295.2	332.0	50	"	"
45	Ref.compressor	1	65.00	19	2.10	104.5	118.0	12	"	"
46	Brine pump	1	4.52	7	0.91	22.7	24.0	20	"	"
47	Coaling water cir.pump	1	"	7	"	20.4	"	14	"	"
48	No.4 fuse box	1	38.70	19	1.63	76	83.0	42	"	"
49	Ordance fan	1	4.52	7	0.91	18.5	24.0	6	"	"
50	" "	1	"	7	"	"	"	70	"	"
51	" "	1	"	7	"	20.6	24.0	7	"	"
52	" "	1	"	7	"	"	"	84	"	"
53	" "	1	"	7	"	9.2	"	6	"	"
54	" "	1	"	7	"	"	"	180	"	"
55	No.5 fuse box	1	9.45	7	1.30	27.28	37.0	88	"	"
56	Cooking blower	1	4.52	7	0.91	5.7	24.0	10	"	"
57	Tofu Machine	1	"	7	"	3.4	"	8	"	"
58	Electric toaster	1	"	7	"	9.09	"	16	"	"
59	" "	1	"	7	"	"	"	48	"	"
60	No.6 fuse board	1	"	7	"	3	"	13	"	"
61	No.7 "	1	"	7	"	2.9	"	76	"	"
62	Fire detect exhaust fan	1	"	7	"	0.6	"	8	"	"
63	" " " "	1	1.13	1	1.20	"	7.0	16	"	L.C & B.
64	Wireless telegraph	1	38.7	19	1.63	33	83.0	80	"	L.C.A & B.
65	5 KVA Motor-Gen. for W.Tel.	1	9.45	7	1.30	"	37.0	40	"	"
		1	4.52	7	0.91	20	24.0	40	"	"
66	½ KVA " "	1	"	7	"	18	"	40	"	"
67		1	2.08	1	1.63	2.5	12.9	40	"	"
67	Battert for Wir.Tel.	1	9.45	7	1.30	18	37.0	12	"	"
68	Gyro compass	1	4.52	7	0.91	6	24.0	60	"	"
69	" " motor	1	2.08	1	1.63	5	12.9	6	"	"
	" " A.C.Gen.	1	"	1	"	3	"	6	"	"
	" " D.C.Gen.	2	4.16	1	"	10	25.8	6	"	"
70	Battery for Cyro Comp.	1	4.52	7	0.91	10	24.0	10	"	"
71	Submain board S.1	1	25.60	19	1.30	48.29	64.0	60	"	"
72	Distribut board D.1	1	4.52	7	0.91	9.52	24.0	20	"	L.C.
73	" " 2	1	"	7	"	17.30	"	2	"	"
74	" " 3	1	"	7	"	10.02	"	2	"	"
75	" " 4	1	"	7	"	9.22	"	24	"	"
76	" " 5	1	"	7	"	12.23	"	2	"	"
77	Submain board S 2	1	"	7	"	9.16	"	40	"	L.A.A & B.
78	Dist. board D.6	1	"	7	"	4.87	"	2	"	L.C.
79	" " 7	1	"	7	"	4.29	"	2	"	"
80	Submain board S 3	1	"	7	1.63	30.3	46.0	10	"	L.C.A & B.
81	Dist.board D 8	1	"	7	0.91	11.71	24.0	2	"	L.C.
82	" " 9	1	"	7	"	13.15	"	2	"	"
83	Bus-bar light in Eng,rm	1	1.13	1	1.20	2.09	7.0	14	"	L.C.A & B.
84	Submain board S 4	1	9.45	7	1.30	16.9	37.0	142	"	"

5m/Y28.

Port of N A G A S A K I, Continuation of Report No. 217 dated October 1936 on the

85	Cargo light & cluster	1	2.08	1	1.63	6.68	12.9	2	Rubber	L.C.A & B.
86	Flex.coard for cargo light	1	3.11	110	0.19	3.41	13.0	50	"	Cab.Type sheathed
87	" " " " cluster	1	"	"	"	1.09	"	50	"	
88	Cargo cluster & Portable L.	1	2.08	1	1.63	3.54	12.9	2	"	L.C.A & B.
89	Flex.cord for Portable L.	1	1.13	40	0.19	0.14	5.0	20	"	C.T.& S.
90	Submain board S.5	1	9.45	7	1.30	16.9	37.0	140	"	L.C.A & B.
91	Cargo light & cluster	1	2.08	110	1.63	6.68	12.9	52	"	C.T & S.
92	Flex cord for cargo light	1	3.11	110	0.19	3.41	13.0	50	"	C.T & S
93	" " " " Cluster	1	"	110	"	1.09	"	50	"	"
94	Cargo cluster & portable L.	1	2.08	1	1.63	3.54	12.9	2	"	L.C.A & B.
95	Flex.cord for portable L.	1	1.13	40	0.19	0.14	5.0	20	"	C.T & S.
96	Navigation light	1	4.52	7	0.91	0.97	24.0	70	"	L.C.A & B.
97	Fore mast lamp	1	1.13	1	1.20	0.18	7.0	186	"	"
98	Starboard side lamp	1	"	1	"	"	"	40	"	"
99	Port side lamp	1	"	1	"	"	"	36	"	"
00	Main mast lamp	1	"	1	"	"	"	210	"	"
01	Stern lamp	1	"	1	"	"	"	212	"	"
02	Suez canal type search light	1	38.7	19	1.63	60	83.0	190	"	"
03	Dist.board D 10	1	4.52	7	0.91	9.18	24.0	60	"	"

Note:- L.C.A & B. Lead covered, armoured & braided.
L.C & B. Lead covered & braided.
C.T & S. Cob. type Sheathed.