

# REPORT ON ELECTRIC FITTINGS.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office..... APR 19 1938

Date of writing Report 22nd Mar 1938 When handed in at Local Office 22nd Mar 1938 Port of NAGASAKI.

No. in Survey held at NAGASAKI. Date, First Survey 28th Dec. 37 Last Survey 10th March 1938  
Reg. Book. (Number of Visits.....)

37151 on the Steel Single Screw Motor Vessel "AZUMA MARU" Tons { Gross 6646  
Net 5651

Built at Nagasaki By whom built Mitsubishi Jukogyo KK Yard No. 700 When built 1938

Owners Nippon Yusen K.K. Port belonging to Tokyo.

Electric Light Installation fitted by Mitsubishi Jukogyo K.K. Nagasaki. Contract No. / When fitted 1938

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 Aug.G) 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. at floor level.

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 In Engine room, at Forward bulkhead and on floor 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 mica nit 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 and a double pole circuit breaker with overload release, reverse current trip & time lag device and a single pole equalizer switch interlocked with the circuit breaker as per Rule for each generator. A double pole knife switch and D.P.fuses for each outgoing current.

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 on each pole & 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 6.36 for Lighting, 9.4 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 on perforated or unperforated steel plates by metal clips and protected by metal covers where necessary. also in steel tubes.

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 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 Only connection is that of the wireless telegraph area of which is 28.70 sq. millimetre.

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 in pilot house.

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 No, how are the cables led /

where are the controlling switches situated /

**Searchlight Lamps, No. of 4 projectors** whether fixed or portable Portable, are their fittings as per Rule Yes (1 Suez canal type search light)

**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				DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.	
		Kilowatts.	Volts.	Amps.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN	3	220	225	978	360	Diesel engine	Diesel oil	Above 150° F
AUXILIARY	1	30	225	153	650	" "	" "	" "
EMERGENCY								
ROTARY TRANSFORMER	2	5 KVA	250	80	2400	8HP. DC. Motor 220V. 33A. 2400 rpm.		
	1	1/2 KVA	100	2.5	8533	1/2 HP. DC. Motor 80V. 18A. 3333 rpm.		

GENERATOR, LIGHTING AND HEATING CONDUCTORS.

DESCRIPTION.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT. AMPERES.		Approximate Length. (Lead and Return.) Metres.	Insulated with	HOW PROTECTED.
	No. per Pole.	Total Effective Area sq. mm.	No.	Diameter.	In Circuit.	Rule.			
MAIN GENERATOR	2	1092	127	2.35	978	1024	65	Rubber	L.A.B.
EQUALISER CONNECTIONS	1	546	"	"	489	512	58	"	"
AUXILIARY GENERATOR	1	95.4	37	1.85	133	152	43	"	"
EMERGENCY GENERATOR									
ROTARY TRANSFORMER MOTOR GENERATOR									
ENGINE ROOM	1	14.25	7	1.63	30.3	46	10	"	L.A.B.
BOILER ROOM									
AUXILIARY SWITCHBOARDS	1	321	61	2.60	264.2	332	32	"	L.A.B.
No. 2 Fuse board	2	524	61	2.35	1215	1325	124	Paper	L.A.B.
No. 3 Fuse board	2	390	37	2.60	1918	1026	116	"	"
Between No. 2 & 3 fuseboard	1	321	61	"	666	804	68	"	"
Between No. 3 & 4 FB	1	262	61	2.35	528	662	63	"	"
Dist. boards.	1	4.52	7	.91	7.8	2.24	2 to 36	Rubber	L.A.B.
ACCOMMODATION 2nd Dk	1	"	7	"	20	24	60	"	L.A.B.
" Boat Br. U. Dk	1	25.60	19	1.30	49	64	60	"	"
Navigation lights	1	4.52	7	.91	98	24	68	"	L.A.B.
WIRELESS	1	38.7	19	1.63	33	83	70	"	"
SEARCHLIGHT	1	38.7	19	"	60	83	170	"	"
MASTHEAD LIGHT	1	1.13	1	1.20	.18	7.4	186 to 210	"	"
SIDE LIGHTS	1	"	1	"	.18	"	33 to 36	"	"
COMPASS LIGHTS									
POOP LIGHTS	1	1.13	1	1.20	.18	7.4	213	"	"
CARGO LIGHTS	1	9.45	7	1.30	16.9	37	140	"	"
ARC LAMPS									
HEATERS									

Note:- (L.A.B. Lead covered & braided cable. L.A.B. Lead covered armoured & braided cable.)

MOTOR CONDUCTORS.

DESCRIPTION.	No. of Motors.	CONDUCTORS.		COMPOSITION OF STRAND.		TOTAL MAXIMUM CURRENT. AMPERES.		Approximate Length. (Lead and Return.) Metres.	Insulated with	HOW PROTECTED.
		No. Per Pole.	Total Effective Area sq. mm.	No.	Diameter.	In Circuit.	Rule.			
BALLAST PUMP	1	1	65	19	2.10	102	118	76	Rubber	L.A.B.
MAIN BILGE LINE PUMPS	1	1	9.45	7	1.30	31	37	61	"	"
GENERAL SERVICE PUMP	1	1	65	19	2.10	102	118	69	"	"
EMERGENCY BILGE PUMP										
SANITARY PUMP										
CIRC. SEA WATER PUMPS	2	each	321	61	2.60	302	332	32	"	L.A.B.
CIRC. FRESH WATER PUMPS										
AIR COMPRESSOR Ref. M.	2	each	65	19	2.10	89	118	21	"	"
FRESH WATER PUMP	1	1	4.52	7	.91	14.8	24	58	"	"
ENGINE TURNING GEAR	1	1	25.6	19	1.30	59	64	85	"	"
EMERGENCY TURNING GEAR	2	each	65	19	2.10	109	118	8	"	"
LUBRICATING OIL PUMPS										
OIL FUEL TRANSFER PUMP	2	1	38.7	19	1.63	78	83	68	"	"
WINDLASS	1	1	321	61	2.60	397	432	51	"	"
WINCHES, FORWARD	4	each	159	37	2.35	222	295	18	"	"
" " " "	2	ton	75.3	37	1.63	130	160	26	"	"
WINCHES, AFT	3	"	"	"	"	"	"	16	"	"
" " " "	5	"	159	"	2.35	222	295	17	"	"
STEERING GEAR-										
(a) MOTOR GENERATOR	1	1	75.3	37	1.63	132	160	154	"	"
(b) MAIN MOTOR	1	1	65	19	2.10	100	124	14	"	"
WORKSHOP MOTOR	1	1	4.52	7	.91	11.2	24	50	"	"
VENTILATING FANS	4	each	"	7	"	20.6	24	7 to 180	"	"
Cargo Oil pump	1	1	65	19	2.10	102	118	72	"	"
P&J. Cool. W. pumps	2	each	480	91	2.60	410	461	62	"	"
57HP. Mooring Winch & 19KW Steering Gen. emergency.	2	1	159	37	2.35	222	295	64	"	"
Helm Indicator	1	1	4.52	7	0.91	1.33	24	10	"	"
Gro Compas	1	1	"	7	"	"	"	57	"	"

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.

*K. Sarnin*  
GENERAL MANAGER

Electrical Engineers.

Date MAR 26 1938

COMPASSES.

Distance between electric generators or motors and standard compass 5 metres from 1/2 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 Metre feet from standard compass 0.3 Metre 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 Every & any course in the case of the standard

compass, and Nil degrees on Every & any course in the case of the steering compass.

NAGASAKI WORKS, MITSUBISHI JUKOGYO KABUSHIKI KAISHA.

*K. Sarnin*  
GENERAL MANAGER

Builder's Signature.

Date MAR 26 1938

Is this installation a duplicate of a previous case Yes If so, state name of vessel "Awata Maru"

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

This installation has been constructed and installed under Special survey in accordance with the Rules and Approved plans.

The materials and workmanship are good. Generators were tried under full load, overload, and parallel running, and governor tests on board, with satisfactory results.

All motors & lighting circuits examined under full working conditions and found satisfactory.

This case is eligible in our opinion to have the notations "Electric light" & "Wireless" in the Register Book.

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

*Noted  
F.Y.  
21/4/38*

Total Capacity of Generators 690 Kilowatts.

The amount of Fee ... £ 62-5-0 : When applied for, 16. 3. 38

Travelling Expenses (if any) £ : : When received, 23. 5. 19. 38

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

Committee's Minute TUE. 26 APR 1938

Assigned See Nag 98 2386

2m, 31. - Transfer  
The Surveyors are requested not to write on or below the space for Committee's Minute.



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