

Rpt. 13.

No. 450

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office.

13 SEP 1955

Date of writing Report 14th June 1955 When handed in at Local Office 19 Port of Shimomoseki

No. in Survey held at Nagasaki, Japan Date, First Survey 9th March Last Survey 9th June 1955
Reg. Book. (No. of Visits 13)on the M.T. "KOCHU MARU" carrying vegetable oil in deep tanks in way of Tunnel Tons { Gross 9197.25
Net 5372.24
Built at Nagasaki, Japan By whom built Mitsubishi Zosen K.K. Yard No. 1445 When built 6mo 1955
Owners Daido Kaiun K.K. Port belonging to Kobe

Installation fitted by Mitsubishi Zosen K.K. When fitted 6mo 1955

Is vessel equipped for carrying Petroleum in bulk No Is vessel equipped with D.F. Yes E.S.D. Yes Gy.C. Yes Sub.Sig. No Radar Yes

Plans, have they been submitted and approved Yes System of Distribution Three phase three wire Voltage of Lighting 110

Heating 110 Power 440 D.C. or A.C., Lighting A.C. Power A.C. If A.C. state frequency 60

440 D.C.V. for Leonard Windlass, 220 D.C.V. for Leonard Moving Winch
Prime Movers, has the governing been found as per Rule when full load is thrown on and off Yes Are turbine emergency governors fitted

with a trip switch. Generators, are they compound wound and level compounded under working conditions

if not compound wound state distance between generators and from switchboard Are the generators arranged to run

in parallel Yes are shunt field regulators provided Is the compound winding connected to the negative or positive pole

Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing Yes Have certificates of

test for machines under 100 kw. been supplied Yes and the results found as per Rule Yes

Position of Generators Part fwd. part aft. outboard and inboard of mch. space, on platform level

is the ventilation in way of generators satisfactory Yes are they clear of inflammable material and protected from mechanical injury and

damage from water, steam and oil Yes Switchboards, where are main switchboards placed at fwd. end of mch. space,

on platform level

are they in accessible positions, free from inflammable gases and acid fumes and protected from mechanical injury and damage from water,

steam and oil Yes what insulation is used for the panels Phenolic-resin-bonded sheet and bar, if of synthetic insulating

material is it an Approved Type Yes if of semi-insulating material (slate or marble) are all conducting parts insulated therefrom as

per Rule Is the construction as per Rule, including locking of screws and nuts Yes Description of Main Switchgear

for each generator and arrangement of equaliser switches. A triple-pole linked air circuit breaker with an instantaneous overcurrent

trip in each phase, overcurrent relays in two phases, a preference overcurrent relay for hold fan circuit,

a reverse power relay and triple-pole linked isolating switch fitted. Neutral insulated from earth

and the switch and fuse gear (or circuit breakers) for each outgoing circuit. A triple-pole linked air circuit breaker with

an overcurrent trip on each pole fitted. Breakers of De-ion type made by Mitsubishi Electric

Mfg. Co., Ltd., Tokyo

Are compartments containing switchboards composed of fire-resisting material or lined as per Rule Yes Instruments on main switchboard 3

ammeters 3 voltmeters 1 synchronising devices. For compound machines in parallel are the ammeters and reversed current

3 wattmeters, 2 frequency meters. protection devices connected on the pole opposite to the equaliser connection. Earth Testing, state means provided 2 sets of

metallic filament lamps for power and lighting circuits

Switches, Circuit Breakers and Fuses, are they as per Rule Yes are the fuses an Approved Type Yes

Fuji Elect. Mfg. Co., Ltd., Tokyo and make of fuses Utsunomiya Elect. Mfg. Co., Ltd., Tokyo are all fuses labelled Yes If circuit breakers are provided for the generators, at what

overload do they operate 50% (580 A) 20 sec. and at what current do the reversed power protective devices operate 2.5 kW

Joint Boxes, Section Boards and Distribution Boards, is the construction as per Rule Yes

Cables, are they insulated and protected as per Rule Yes if otherwise than as per Rule are they of an Approved Type

state maximum fall of pressure between bus bars and any point under maximum load 6 volts are the ends of all cables having a sectional

area of 0.01 square inch and above provided with soldering sockets mechanical clamps Are all paper insulated and varnished cambric insulated

cables sealed at the ends. Yes Are all the cable runs in accessible positions, not exposed to drip or accumulation of water or oil,

high temperatures or risk of mechanical damage. Yes are any cables laid under machines or floorplates. Yes if so, are they

adequately protected. Yes Are cables in machinery spaces, galleys, laundries, etc., lead covered. Yes or run in conduit. Yes, partly

or of the "HR" type. Yes, partly State how the cables are supported or protected. Cables of lead alloy sheathed or polychloroprene

sheathed, metal braided or armoured secured by metal clips on coated steel hangers or

galvanized perforated steel plates. Cables in cargo spaces protected by steel platings

Are all lead sheaths, armouring and conduits effectually bonded and earthed. Yes Are all cables passing through decks and watertight

bulkheads provided with deck tubes or watertight glands. Yes where unarmoured cables pass through beams, etc., are the holes

effectively bushed. Yes Refrigerated chambers, are the cables and fittings as per Rule. Yes

Alternative Lighting, are the groups of lights in the engine and boiler rooms arranged as per Rule. Yes Emergency Supply, state position Navigation bridge deck stbd. side, 24 V. battery units with automatic control switch for lighting accommodation, navigation

Navigation Lamps, are they separately wired. Yes controlled by separate double pole switches and fuses. Yes Are the switches and fuses in a position accessible only to the officers on watch. Yes Is an automatic indicator fitted. Yes Is an alternative supply provided. Yes

Secondary Batteries, are they constructed and fitted as per Rule. Yes are they adequately ventilated. Yes state battery capacity in ampere hours. 1 set x 24 V. x 80 A.H. and 1 set x 24 V. x 200 A.H.

Fittings, are all fittings on weather decks, in stokeholds and engine rooms and wherever exposed to drip or condensed moisture, weatherproof. Yes Are any fittings installed where readily combustible materials or inflammable or explosive dust or gases are likely to be present. Yes if so, how are they protected. a certified flameproof lighting fitting placed in secondary battery room Are all fittings suitably ventilated. Yes and where are the controlling switches fitted. in weatherproof casing outside battery room

Searchlight Lamps, No. of —, whether fixed or portable. —, are they of the carbon arc or of the filament type. —

Heating and Cooking, is the general construction as per Rule. Yes are the frames effectually earthed. Yes are heaters in the accommodation of the convection type. Yes Motors, are all motors constructed and installed as per Rule and placed in well-ventilated compartments in which inflammable gases cannot accumulate and protected from damage from water, steam and oil. Yes Are motors coupled to oil fuel transfer and pressure pumps capable of being stopped from a position accessible in the event of fire in the pump compartment. Yes Have motors of 100 BHP and over been inspected by the Surveyors during manufacture and testing. — Have certificates of test for motors under 100 BHP intended for essential sea services been supplied and the results found as per Rule. Yes

Control Gear and Resistances, are they constructed and fitted as per Rule. Yes Lightning Conductors, where required are they fitted as per Rule. — Ships carrying Oil having a Flash Point less than 150° F. Have all the special requirements of the Rules for such ships been complied with. — are all fuses of an Approved Cartridge Type. — make of fuse. — Are the fittings for pump rooms, 'tween deck spaces, etc., in accordance with the special requirements for such ships. — Are the cables lead covered as per Rule. — E.S.D., if fitted state maker. Tokyo Kikai Seizuko Co., Ltd. BENLIX type Location of transmitter. and and receiver. D.B. F. 119/120

Spare Gear, if the vessel is for open sea service have spares been provided as per Rule and suitably stored in dry situations. Yes

Insulation Tests, has the insulation resistance of all circuits and apparatus been tested and found satisfactory. Yes

PARTICULARS OF GENERATING PLANT.

DESCRIPTION OF GENERATOR.	No. of	MAKER.	RATED AT				PRIME MOVER.	
			K. V. A. Kilowatts per Generator.	Volts.	Ampères.	Revs. per Min.	TYPE.	MAKER.
MAIN	3	Mitsubishi Elec. Mfg. Co., Ltd. Nagasaki	300	450	385	360	Diesel	Nagasaki M.K., Mitsubishi, Josen K.K., Nagasaki
EMERGENCY								
ROTARY TRANSFORMER								

GENERATOR CABLES.

DESCRIPTION.	K. V. A. Kilowatts.	CONDUCTORS.		MAXIMUM CURRENT IN AMPERES.		APPROX. LENGTH (lead plus return-feet).	INSULATION.	PROTECTIVE COVERING.
		No. in Parallel per Pole.	Sectional Area or No. and Dia. of Strands. Sq. ins. or sq. mm.	In the Circuit.	Rule.			
MAIN GENERATOR	300	2 (3C)	37/083	385	400	P. 13.5	V. canbri	Lead, metal braided
"	EQUALISER					P. 11.0		
						P. 11.0		
EMERGENCY GENERATOR								
ROTARY TRANSFORMER: MOTOR								
"	GENERATOR							

MAIN DISTRIBUTION CABLES (to Section Boards, Distribution Fuse Boards, etc.).

DESCRIPTION.								
Power:-								
Main switchboard to eng. room aux., stbd. aft. S-B (P. 11)	1 (3C)	19/064	65.3	91	24	V. canbri	Lead, metal braided	
Main switchboard to eng. room aux., port aft. S-B (P. 12)	1 (3C)	7/064	32.0	51	29	V. canbri	Lead, metal braided	
Main switchboard to eng. room aux., 3rd deck S-B (P. 13)	1 (3C)	19/064	88.0	91	24	V. canbri	Lead, metal braided	
Main switchboard to eng. room vent fan S-B (P. 14)	1 (3C)	7/052	13.0	38	15	V. canbri	Lead, metal braided	
Main switchboard to cargo winch fwd. S-B (P. 15)	2 (3C)	37/072	230*	332	48	V. canbri	Lead, metal braided	
Main switchboard to cargo winch aft. S-B (P. 16)	2 (3C)	37/072	230*	332	56	V. canbri	Lead, metal braided	
Main switchboard to hold fan S-B (P. 17)	1 (3C)	19/052	44.0	70	19	V. canbri	Lead, metal braided	
Main switchboard to refrigerating plant S-B (P. 18)	1 (3C)	37/083	150.0	200	17	V. canbri	Lead, metal braided	
Main switchboard to thermostat fan S-B (P. 19)	1 (3C)	7/052	16.4	38	33	V. canbri	Lead, metal braided	
Note:- * Diversity factor applied.								

LIGHTING, HEATING, WIRELESS, NAVIGATION LIGHTS, ETC., CABLES.

DESCRIPTION.	CONDUCTORS.		MAXIMUM CURRENT IN AMPERES.		APPROX. LENGTH (lead plus return-feet). ft.	INSULA- TION.	PROTECTIVE COVERING.
	No. in Parallel per Pole.	Sectional Area or No. and Dia. of Strands. Sq. ins. or sq.-mm.	In the Circuit.	Rule.			
<u>Lighting:-</u>							
Main switchboard to 440/110 3X20KVA transformer (P-24)	1 (3C)	19/064	81	91	8	V. canbri	Lead, metal braided
above transformer to lighting panel (P-24A)	2 (3C)	37/072	315	332	6.5	V. canbri	Lead, metal braided
Lighting panel to navigation bridge light S-B (L-1)	1 (3C)	7/064	40	51	30	V. canbri	Lead, metal braided
Lighting panel to accommodation light S-B (L-2)	1 (3C)	19/083	128	128	26	V. canbri	Lead, metal braided
Lighting panel to cargo light S-B (L-3)	1 (3C)	19/064	66	91	25	V. canbri	Lead, metal braided
Lighting panel to engine room light S-B (L-4)	1 (3C)	19/064	74	91	10	V. canbri	Lead, metal braided
S-B (L-1) to navigation light D-F-B.	1 (2C)	7/064	2	72	L+R 6	V. canbri	Lead, metal braided
S-B (L-2) to boat deck light S-B (L-2-1)	1 (3C)	7/064	30	51	10	V. canbri	Lead, metal braided
S-B (L-2-1) to navigation light D-F-B.	1 (2C)	7/064	2	72	L+R 8	V. canbri	Lead, metal braided
<u>Cooking and Heating:-</u>							
Lighting panel to saloon pantry S-B (L-6)	1 (3C)	37/072	138	166	22	V. canbri	Lead, metal braided
above to galley and heater S-B (L-6A)	1 (3C)	37/072	86	166	27	V. canbri	Lead, metal braided
<u>Wireless:-</u>							
Lighting panel to radio S-B (110V) (L-7)	1 (3C)	7/052	17.3	38	34	V. canbri	Lead, metal braided
Main switchboard to radio S-B (440V) (P-20)	1 (3C)	7/036	11.5	19	34	V. canbri	Lead, metal braided
<u>Suez Canal Searchlight:-</u>							
Power S-B (P-15) to 440/110 1X5KVA transformer (P-15)	1 (2C)	7/036	estimated (77)	17	L+R 63	Indian R.	Lead, armoured
above transformer to switch and fuse box.	1 (2C)	7/064	(45)	72	L+R 14	V. canbri	Lead, metal braided

MOTOR CABLES.

ALL IMPORTANT MOTORS TO BE ENUMERATED.		No.	B.H.P.	CONDUCTORS.		MAXIMUM CURRENT IN AMPERES.		APPROX. LENGTH (lead plus return-feet).	INSULATION.	PROTECTIVE COVERING.
				No. in Parallel per Pole.	Sectional Area or No. and Dia. of Strands. Sq. ins. or sq. mm.	In the Circuit.	Rule.			
Jacket and Piston Cooling F.W. Pumps	2	45	1 (3C)	19/052	54	70	10.9	V. canbri	Lead, metal braided	
Cooling S.W. Pumps	2	55	1 (3C)	19/052	64	70	9.7	V. canbri	Lead, metal braided	
L.O. Pumps	2	15	1 (3C)	7/044	21	29	25.25	V. canbri	Lead, metal braided	
Fire and G.S. Pump	1	50	1 (3C)	19/052	60	70	32	V. canbri	Lead, metal braided	
Bilge and Ballast Pump	1	45	1 (3C)	19/064	82	91	36	V. canbri	Lead, metal braided	
Steering gear	2	20	1 (3C)	7/044	28*	29	92.95	V. canbri	Lead, metal braided	
O.F. Transfer Pumps	1	15	1 (3C)	7/052	20.4	38	14	V. canbri	Lead, metal braided	
O.F. Service Pumps	2	4	1 (3C)	3/036	5.4	7	12.5/11.5	Indian R.	H.R., metal braided	
L.O. Shifting Pump	1	4	1 (3C)	3/036	5.4	7	17	Indian R.	H.R., metal braided	
L.O. Purifier	1	2	1 (3C)	3/036	2.8	7	8	Indian R.	H.R., metal braided	
O.F. Purifiers	3	2	1 (3C)	3/036	2.8	7	19.19+20	Indian R.	H.R., metal braided	
O.F. Clarifiers	2	2	1 (3C)	3/036	2.8	7	17+17	Indian R.	H.R., metal braided	
Purifier Pumps	2	3	1 (3C)	3/036	4.2	7	20+19	Indian R.	H.R., metal braided	
Purifier Pump	1	1.5	1 (3C)	3/036	2.2	7	22	Indian R.	H.R., metal braided	
Bilge Pump	1	5.5	1 (3C)	7/036	7.2	12	6.5	Indian R.	H.R., metal braided	
Turbo Charger L.O. Pump	1	2	1 (3C)	3/036	3	7	29	Indian R.	H.R., metal braided	
Engine Room Vent Fans	2	5	1 (3C)	7/036	6.6	12	51+56.5	Indian R.	H.R., metal braided	
Leonard Winch M-G Motors (1P, 2P, 4P, 5P)	4	50KW	1 (3C)	19/052	78.5*	76	34.5, 7.5, 2.5, 11	V. canbri	Lead, metal braided	
Leonard Winch and Windlass M-G Motor	1	90KW	1 (3C)	19/083	141*	133	29.5	V. canbri	Lead, metal braided	
Windlass (440V D.C.)	1	80	1	19/064	158*	133	L+R 77	V. canbri	Lead, metal braided	
Leonard Winch M-G Motors (1P, 2P, 4P)	3	50KW	1 (3C)	19/052	78.5*	76	36.5, 15.5	V. canbri	Lead, metal braided	
Leonard Winch M-G Motor (3P, 16)	1	90KW	1 (3C)	19/083	141*	133	35	V. canbri	Lead, metal braided	
Hoisting Winch (220V D.C.)	1	53.5	1	19/083	220*	192	L+R 63	V. canbri	Lead, metal braided	
Auxiliary Blowers	1	30	1 (3C)	7/064	35	51	34.5	V. canbri	Lead, metal braided	
Ref. Plant Gas Compressors	3	30	1 (3C)	7/064	37	51	28, 30.5	V. canbri	Lead, metal braided	
Ref. Plant G.W. Pumps	2	5	1 (3C)	1/064	6.2	7	30+30	Indian R.	Lead, metal braided	
Ref. Plant Air Cooler Fans	4	3	1 (3C)	3/036	4.0	7	44, 46	Indian R.	H.R., metal braided	

Note:- * Intermittently-loaded cables.

The Electrical Equipment is installed in accordance with the approved plans and the requirements of the Rules.

All Insulated Conductors are guaranteed to have been tested at the maker's works as specified in the Rules.

The foregoing is a correct description.

I. Matsushita
NAGASAKI WORKS
MITSUBISHI SHIPBUILDING & ENGINEERING CO., LTD.

Electrical Contractors.

Date *14th June, 1955*

COMPASSES.

Have the compasses been adjusted under working conditions... *Yes*

I. Matsushita

NAGASAKI WORKS
MITSUBISHI SHIPBUILDING & ENGINEERING CO., LTD.

Builder's Signature.

Date *14th June, 1955*

Have the foregoing descriptions and schedules been verified and found correct... *Yes*

Is this installation a duplicate of a previous case... *No* If so, state name of vessel...

Plans. Are approved plans forwarded herewith... *No* If not, state date of approval *18.1.55, 25.2.55, 4.3.55, 4.4.55*

Certificates. Are certificates of test for motors engaged on essential sea services and generators forwarded herewith... *Yes*

General Remarks. (State quality of workmanship, whether insulation tests, etc., have been made, opinions as to class, etc.)

The Electrical Equipment and Installation of this ship have been made under special survey in accordance with the requirements of the Rules, the approved plans and the Secretary's letters.

The materials and workmanship are good.

All tests and trials required by the Rules have been completed with satisfactory results.

Total Capacity of Generators *900 KVA* Kilowatts.

The amount of Fee ... *£294,000*

When applied for,

5. AUG. 1955
LOCALLY

When received,

19

Travelling Expenses (if any) £

FRIDAY 21 OCT 1955

Committee's Minute

Assigned *See Rpt. 4 C.*

A. Murao
Surveyor to Lloyd's Register of Shipping.



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Foundation