

No. 20274

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

15 SEP 1954

Received at London Office

ing Report 9th Sept 1954 When handed in at Local Office 13th Sept 1954 Port of Middlesbrough
 Survey held at Haverton Hill on Tees Date, First Survey 12.3.54 Last Survey 19.8.54
 (No. of Visits 14)

M. V. "Bygnus"

Tons { Gross
Net

on the Haverton Hill on Tees By whom built Furness S. B. Co. Yard No. 463 When built 1954

Sec. Transoceanica S.A. Port belonging to Monrovia

on fitted by Furness Shipbuilding Co. Ltd. When fitted 1954

equipped for carrying Petroleum in bulk Yes Is vessel equipped with D.F. Yes E.S.D. Yes Gy.C. Yes Sub.Sig. - Radar Yes

have they been submitted and approved Yes System of Distribution Two wire insulated Voltage of Lighting 110

110 Power 110 D.C. or A.C., Lighting D.C. Power D.C. If A.C. state frequency -

vers, has the governing been found as per Rule when full load is thrown on and off Yes Are turbine emergency governors fitted

ip switch - Generators, are they compound wound Yes, and level compounded under working conditions Yes

generators arranged to run in parallel Yes Is the compound winding connected to the negative or positive pole Negative

achines 100 kw. and over been inspected by the Surveyors during manufacture and testing - Have certificates of test for machines

0 kw. been supplied and the results found as per Rule Yes Position of Generators Fore and aft, starboard

on Engine Room starting platform level

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

from water, steam and oil Yes Switchboards, where are main switchboards placed on switchboard flat

generators on starboard side, arranged fore and aft and facing port side

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

id oil Yes, what insulation is used for the panels Sindanyo, if of synthetic insulating

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

generator and arrangement of equaliser switches Triple Pole Air Break Circuit Breaker with Overloads

Time Delays on two poles, 16-volt coil, Reverse current coil, and third pole coupled

equaliser connection Double Pole Air Break Circuit Breaker with Overloads and Time

is on both poles, 16-volt coil, and electrically interlocked with main switchboard

switch and fuse gear (or circuit breakers) for each outgoing circuit

Double Pole Single Throw Quick Break Knife Switch and Double Pole Fuses

departments containing switchboards composed of fire-resisting material or lined as per Rule Yes Instruments on main switchboard 4

rs 5 voltmeters - synchronising devices For compound machines in parallel are the ammeters and reverse current

ion devices connected on the pole opposite to the equaliser connection Yes Earth Testing, state means provided Earth lamps

d to 'E' thro switches & fuses Preference Tripping, state if provided - and tested -

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

f fuses Siemens 'Z' are all fuses labelled Yes If circuit breakers are provided for the generators, at what

d do they operate 25% and at what current do the reverse current protective

operate 15% Cables, are they insulated and protected as per Rule Yes

wise than as per Rule are they of an Approved Type - state maximum fall of pressure between bus bars and any point

maximum load < 6.6 volts Are all paper insulated and varnished cambric insulated cables sealed at the ends Yes

l the cable runs in accessible positions not exposed to drip or accumulation of water or oil, high temperatures or risk of mechanical

Yes are any cables laid under machines or floorplates Yes, if so, are they adequately protected Yes State

f cables (if in conduit this should also be stated) in machinery spaces L 6 A+B galleys L 6 + B

undries L 6 + B State how the cables are supported or protected Forward mains cleated to steel

nls along sides of fore and aft gangway Generator mains clipped to solid steel tray

Engine Room wiring cleated to perforated steel tray plate Pump Room wiring

id to perforated steel tray plate L 6 cables in accommodation clipped to wood grounds

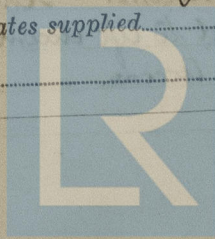
l lead sheaths, armouring and conduits effectually bonded and earthed Yes Are all cables passing through decks and watertight

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

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

refrigeration fan motors been constructed under survey - and test certificates supplied

he motors accessible for maintenance at all times



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Alternative Lighting, are the groups of lights in the engine and boiler rooms arranged as per Rule. Yes. Emergency Supply, state position

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, fitted and adequately ventilated as per Rule. Yes, state battery capacity in

ampere hours. Where required to do so does it comply with 1948 International Convention.

Lighting, is fluorescent lighting fitted. Yes. If so, state nominal lamp voltage. Yes and compartments where lamps are fitted. Yes.

Fittings, are all fittings on weather decks, in stokeholds and engine rooms and wherever exposed to drip or condensed moisture, weather proof. Yes.

Searchlights, No. of 1, whether fixed or portable. Portable, are they of the carbon arc or of the filament type. Filament.

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. Yes.

Have certificates of test for motors under 100 BHP intended for essential sea services been supplied and the results found as per Rule. Yes.

Lightning Conductors, where required are they fitted as per Rule. Yes.

Ships carrying Oil having a Flash Point of less than 150° F. Have all the special requirements of the Rules for such ships been complied

with. Yes, are all fuses of an Approved Cartridge Type. Yes, make of fuse. Siemens 'Z'. Are the fittings for pump

rooms, 'tween deck spaces, etc., in accordance with the special requirements for such ships. Yes. Are all cables lead covered as per Rule. Yes.

E.S.D., if fitted state maker. Marconi, location of transmitter and receiver. Frames 46/47/48, Frames 164/166 Ind.

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.	
			Kw. per Generator.	Volts.	Amperes.	Revs. per Min.	TYPE.	MAKER.
MAIN	2	W. & A. Allen Sons & Co. Ltd.	60	110	545	500	Electric	W. & A. Allen Sons & Co. Ltd.
	1	David White & Co. Ltd.	25	110	227	1000	Diesel	Russell Newbery & Co.
EMERGENCY ROTARY TRANSFORMER								

GENERATOR CABLES.

DESCRIPTION.	No. of	Kw.	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	1	60	2	34/053	545	628	✓ 80	V.6.	L.6.A.7.B.
"	1	60	2	34/053	243	314	✓ 40	V.6.	L.6.A.7.B.
"	1	60	2	34/053	545	628	✓ 60	V.6.	L.6.A.7.B.
"	1	25	1	34/053	243	314	✓ 30	V.6.	L.6.A.7.B.
"	1	25	1	34/042	228	260	✓ 60	V.6.	L.6.A.7.B.
EMERGENCY GENERATOR									
ROTARY TRANSFORMER: MOTOR									
"									
"									

MAIN DISTRIBUTION CABLES (to Auxiliary Switchboards, etc.).

DESCRIPTION.									
Interconnector between Main & Aux. Boards	1	34/042	228	260	✓ 320	V.6.	L.6.A.7.B.		
Shore Supply to Main Switchboard	1	34/053	300	314	✓ 120	V.6.	L.6.A.7.B.		
Main switchboard to Refrig. Mch. S.B.'T	1	19/064	80	143	✓ 330	V.6.	L.6.A.7.B.		
Main switchboard to Workshop. S.B.'Q	1	4/064	66	80	✓ 180	V.6.	L.6.A.7.B.		
Main switchboard to Mch. Vent. S.B.'R	1	19/052	110	110	✓ 60	V.6.	L.6.A.7.B.		
Main switchboard to Aft Accom Vent S.B.'S	1	19/064	99	143	✓ 100	V.6.	L.6.A.7.B.		
Main switchboard to Galley & Aft S.B.'G	1	19/052	91	110	✓ 240	V.6.	L.6.A.7.B.		
Main switchboard to Boat Hoist S.B. Aft	1	4/052	35	60	✓ 200	V.6.	L.6.A.7.B.		
Boat Hoist S.B. to Boat Hoist Bunks P.S.	1	4/052	35	60	✓ 200/260	V.6.	L.6.A.7.B.		
Main switchboard to Laundry. S.B.'U	1	4/036	16	24	✓ 260	V.6.	L.6.A.7.B.		
Main switchboard to Aft Accom. Port S.B.'A	1	19/044	77	92	✓ 200	V.6.	L.6.A.7.B.		
S.B.'A' to Aft Accom. Port. S.B.'C	1	19/044	40	92	✓ 40	V.6.	L.6.A.7.B.		
Main switchboard to Aft Accom. S.B.'B	1	4/064	73	80	✓ 120	V.6.	L.6.A.7.B.		
S.B.'B' to Aft Accom. S.B.'D	1	4/064	38	80	✓ 40	V.6.	L.6.A.7.B.		

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

DESCRIPTION.	No. in Parallel per Pole.	Sectional Area or No. and Dia. of Strands. Sq. ins. or sq. mm.	MAXIMUM CURRENT IN AMPERES.		APPROX. LENGTH (lead plus return feet).	INSULATION.	PROTECTIVE COVERING.
			In the Circuit.	Rule.			
Main switchboard to Aft Accom. Light. S.B.'E	1	4/044	38	45	✓ 120	V.6.	L.6.A.7.B.
Main switchboard to Eng. Room Port S.B.'H	1	4/052	30	60	✓ 200	V.6.	L.6.A.7.B.
Main switchboard to Eng. Room Aft S.B.'J	1	4/052	25	60	✓ 60	V.6.	L.6.A.7.B.
Main switchboard to Boiler Room S.B.'K	1	4/052	24	60	✓ 120	V.6.	L.6.A.7.B.
Main switchboard to Aft Floods S.B.'F	1	4/036	16	24	✓ 100	V.6.	L.6.A.7.B.
Main switchboard to Wireless	1	4/053/4/064	15	202	✓ 80/130	V.6.	L.6.A.7.B.
Main switchboard to Suez Canal Projector	1	19/044	27.2	92	✓ 550/460	V.6.	L.6.A.7.B.
Main switchboard to Midships Sub. Switchboard	2	34/042	263	260	✓ 390	V.6.	L.6.A.7.B.
Sub. switchboard to Forecastle S.B.'D	1	4/044	8	45	✓ 110/110	V.6.	L.6.A.7.B.
C.O. Switch to Wheelhouse S.B.'M	1	4/044	30	31	✓ 40	V.6.	L.6.A.7.B.
S.B.'M' to Navigation Indicator	1	4/044	1.82	31	✓ 30	V.6.	L.6.A.7.B.
Sub. switchboard to Radar Equipment	1	4/044	30	45	✓ 100	V.6.	L.6.A.7.B.
Sub. switchboard to Gyro Compass	1	4/036	6	24	✓ 100	V.6.	L.6.A.7.B.
Sub. switchboard to Echo Sounder	1	4/029	2	15	✓ 120	V.6.	L.6.A.7.B.
S.B.'G' to Battery Charger	1	3/029	3	5	✓ 120	V.6.	L.6.A.7.B.
S.B.'G' to Galley Connections	1	3/036	10	10	✓ 60	V.6.	L.6.A.7.B.
S.B.'G' to Pantry Connections (2)	1	3/036	10/10	10	✓ 60/60	V.6.	L.6.A.7.B.
S.B.'G' to Domestic Refrig. Pantry	1	3/029	3.2	5	✓ 40	V.6.	L.6.A.7.B.
S.B.'G' to European Galley Blower	1	3/029	3.2	5	✓ 84	V.6.	L.6.A.7.B.
S.B.'G' to Asiatic Galley Blower	1	3/029	3.2	5	✓ 80	V.6.	L.6.A.7.B.
S.B.'U' to Washing Machine	1	3/029	3.2	5	✓ 40	V.6.	L.6.A.7.B.
S.B.'U' to Hydro Extractor	1	3/036	5.4	10	✓ 40	V.6.	L.6.A.7.B.
S.B.'U' to Hon. Connection	1	3/036	4	10	✓ 35	V.6.	L.6.A.7.B.
S.B.'V' to Pantry Connections (2)	1	3/036	10/10	10	✓ 90/40	V.6.	L.6.A.7.B.
S.B.'V' to Wheelhouse Connection	1	4/029	4	15	✓ 144	V.6.	L.6.A.7.B.
S.B.'V' to Pantry Domestic Refrig.	1	3/029	3.6	5	✓ 78	V.6.	L.6.A.7.B.

MOTOR CABLES.

ALL IMPORTANT MOTORS TO BE ENUMERATED.									
No.	B.H.P.								
Midships Vent Fan	5.0	1	4/064	41	80	✓ 160	V.6.	L.6.A.7.B.	
Fore Water Pump	2.5	1	4/036	22	24	✓ 80	V.6.	L.6.A.7.B.	
Boat Hoist Midships	4.0	1	4/052	33	60	✓ 150/110	V.6.	L.6.A.7.B.	
Boat Hoist Aft	4.0	1	4/052	33	60	✓ 200/260	V.6.	L.6.A.7.B.	
C.W. Circulating Pump	1/6	1	3/036	2	10	✓ 180	V.6.	L.6.A.7.B.	
Pneum. S.W. Pump	2.5	1	4/036	22	24	✓ 110	V.6.	L.6.A.7.B.	
Pneum. S.W. Pump	2.5	1	4/036	22	24	✓ 115	V.6.	L.6.A.7.B.	
Oil Purifiers	3.5	1	4/044	28.4	45	✓ 150/100/70	V.6.	L.6.A.7.B.	
Fuel Pumping Pump	1.5	1	4/036	13.5	24	✓ 140	V.6.	L.6.A.7.B.	
Engine Room Crane	3.0	1	4/044	26.5	45	✓ 230	V.6.	L.6.A.7.B.	
Engine Turning Motor	18.0	1	19/064	144	143	✓ 220	V.6.	L.6.A.7.B.	
Exhaust Fan Galley	2.0	1	4/036	18	24	✓ 80	V.6.	L.6.A.7.B.	
Supply Fan Galley	1.25	1	4/036	11.5	24	✓ 75	V.6.	L.6.A.7.B.	
Emergency Generator Room Fans	0.75	1	3/036	7.5	10	✓ 140	V.6.	L.6.A.7.B.	
Lathe	2.0	1	4/036	18	24	✓ 60	V.6.	L.6.A.7.B.	
Drill	2.0	1	4/036	18	24	✓ 80	V.6.	L.6.A.7.B.	
Grinder	0.75	1	3/036	7.64	10	✓ 70	V.6.	L.6.A.7.B.	
Backsaw	1.0	1	3/036	9.5	10	✓ 70	V.6.	L.6.A.7.B.	
Engine Rm Vent Fans	3.1	1	4/052	24	60	✓ 300/200	V.6.	L.6.A.7.B.	
Boiler Rm Vent Fans	1.95	1	4/036	17.5	24	✓ 200/230	V.6.	L.6.A.7.B.	
Accommodation Vent Fans	5.0	1	4/064	41	80	✓ 20/60	V.6.	L.6.A.7.B.	
Refrig. Compressors	4.5	1	4/064	60	80	✓ 40/45	V.6.	L.6.A.7.B.	
Refrig. Pumps	1.0	1	4/044	9.2	45	✓ 280/280	V.6.	L.6.A.7.B.	
Midships Store Supply Fan	1.25	1	4/029	11.5	15	✓ 160	V.6.	L.6.A.7.B.	
Fuel Valve Cooling Pump	1	1	3/036	9.5	10	✓ 60	V.6.	L.6.A.7.B.	
S.B.'R' to Bunks for Portable Tools (2)		1	4/036	10	24	✓ 140	V.6.	L.6.A.7.B.	
S.B.'S' to Bunks in Engine Room Office		1	4/029	10	15	✓ 130	V.6.	L.6.A.7.B.	
S.B.'Q' to Bunks for Portable Tools (2)		1	4/036	10	24	✓ 150	V.6.	L.6.A.7.B.	
S.B.'L' to Drinking Water Fountain		1	3/029	3.2	5	✓ 30	V.6.	L.6.A.7.B.	
S.B.'L' to Captain's Refrig.		1	3/029	2.05	5	✓ 45	V.6.	L.6.A.7.B.	
S.B.'E' to Chief Eng. Refrig.		1	3/029	2.05	5	✓ 50	V.6.	L.6.A.7.B.	

NOTE.—Use Rpt. 13 Continuation Sheet if the above space is insufficient.

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.

For FURNERS SHIPBUILDING CO. LTD. *E. Heavisides* Electrical Contractors. Date *3/10/54*

COMPASSES.

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

For FURNERS SHIPBUILDING CO. LTD. *H. Butterfield* Builder's Signature. Date *3/10/54*

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 *-*

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

General Remarks. (State quality of workmanship and materials, opinions as to class, etc.) *The electrical equipment for this vessel has been installed under special survey and is in accordance with or equivalent to those shown on the approved plans and the Rules for Electrical Equipment.*

The materials used are of good quality and the workmanship is good.

On completion the equipment was run operating under working conditions, the various protective devices were adjusted and operated; and the insulation resistance of all circuits measured and found good.

This installation is in my opinion suitable for a classed vessel intended for the carriage of petroleum in bulk.

Total Capacity of Generators *145 V* Kilowatts.

The amount of Fee ... £ *63 : 15* : When applied for,

Radio Telegraphy Cent £ *6 : 6* : *14/9/1954*

When received,

Travelling Expenses (if any) £ : : *19*

W. W. W. W.
Surveyor to Lloyd's Register of Shipping.

Committee's Minute *FRIDAY 15 OCT 1954*

Assigned *See Rpt 4 b.*



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