

REPORT ON ELECTRICAL EQUIPMENT.

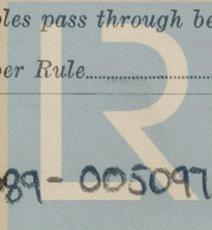
(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

6 JAN 1950

Received at London Office

Date of writing Report 17th DECEMBER 1949 When handed in at Local Office 4 JAN 1950 Port of GLASGOWNo. in Survey held at GREENOCK Date, First Survey 7th SEPTEMBER Last Survey 16th DECEMBER 1949
Reg. Book. (No. of Visits 7)40281 on the 'NORDBO' Tons ^{Gross} _{Net} Built at PORT GLASGOW By whom built W^m HAMILTON & CO LTD Yard No. 480 When built 1949Owners Port belonging to Installation fitted by MESSRS SUNDERLAND FORGE & ENGINEERING CO LTD When fitted 1949Is vessel equipped for carrying Petroleum in bulk YES Is vessel equipped with D.F. YES E.S.D. YES Gy.C. YES Sub.Sig. YES Radar WIRING ONLYPlans, have they been submitted and approved YES System of Distribution TWO WIRE Voltage of Lighting 110Heating 110 Power 110 D.C. or A.C., Lighting D.C. Power D.C. If A.C. state frequency Prime Movers, has the governing been found as per Rule when full load is thrown on and off YES Are turbine emergency governors fittedwith a trip switch YES Generators, are they compound wound YES, and level compounded under working conditions YESif not compound wound state distance between generators and from switchboard Are the generators arranged to runin parallel YES, are shunt field regulators provided YES Is the compound winding connected to the negative or positive poleNEGATIVE Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing YES Have certificates oftest for machines under 100 kw. been supplied YES and the results found as per Rule YESPosition of Generators STEAM GENERATORS - ON FLAT PORT SIDE OF ENGINE ROOM, DIESEL - PORT SIDE ENGINE ROOM FLOOR LEVELis the ventilation in way of generators satisfactory YES are they clear of inflammable material and protected from mechanical injury anddamage from water, steam and oil YES Switchboards, where are main switchboards placed ADJACENT TO STEAMGENERATORS.

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 SINDANYO, if of synthetic insulatingmaterial is it an Approved Type YES, if of semi-insulating material (slate or marble) are all conducting parts insulated therefrom asper Rule YES Is the construction as per Rule, including locking of screws and nuts YES Description of Main Switchgearfor each generator and arrangement of equaliser switches 400 H.P. TRIPLE POLE CIRCUIT BREAKER FITTED WITHOVERLOAD AND REVERSE CURRENT TRIPS.and the switch and fuse gear (or circuit breakers) for each outgoing circuit D.P. KNIFE PATTERN SWITCHES ANDFUSES.Are compartments containing switchboards composed of fire-resisting material or lined as per Rule YES Instruments on main switchboard FIVEammeters FOUR voltmeters synchronising devices For compound machines in parallel are the ammeters and reversed currentprotection devices connected on the pole opposite to the equaliser connection YES Earth Testing, state means provided EARTH LAMPSSwitches, Circuit Breakers and Fuses, are they as per Rule YES, are the fuses an Approved Type YESmake of fuses SIEMENS 'ZED' TYPE, are all fuses labelled YES If circuit breakers are provided for the generators, at whatoverload do they operate FULL LOAD, and at what current do the reversed current protective devices operate 10% 15% FL.Joint Boxes, Section Boards and Distribution Boards, is the construction as per Rule YESCables, 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 4.1 VOLTS, are the ends of all cables having a sectionalarea of 0.01 square inch and above provided with soldering sockets YES Are all paper insulated and varnished cambric insulatedcables 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 NO, if so, are theyadequately protected Are cables in machinery spaces, galleys, laundries, etc., lead covered YES or run in conduit or of the "HR" type State how the cables are supported or protected MAINS - L.C.B. CABLES CLIPPEDTO STEEL PLATE MACHINERY SPACE - L.C.B. CABLES CLIPPED TO STEELWORK OR TRAY.ACCOMMODATION - L.C. CABLE CLIPPED TO WOODWORK.Are all lead sheaths, armouring and conduits effectually bonded and earthed YES Are all cables passing through decks and watertightbulkheads provided with deck tubes or watertight glands YES, where unarmoured cables pass through beams, etc., are the holeseffectively bushed YES Refrigerated chambers, are the cables and fittings as per Rule 

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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 YES

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 YES

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 IN PUMP ROOMS - LIGHTING FITTING IN SEPARATE COMPARTMENT; CENTRECASTLE SPACE FLAMEPROOF FITTINGS

and where are the controlling switches fitted IN ACCOMMODATION SPACE Are all fittings suitably ventilated YES

Searchlight Lamps, No. of ONE, 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

Control Gear and Resistances, are they constructed and fitted as per Rule YES Lightning Conductors, where required are they fitted as per Rule YES 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 YES, are all fuses of an Approved Cartridge Type YES, make of fuse SIEMENS 'ZED' TYPE Are the fittings for pump rooms, 'tween deck spaces, etc., in accordance with the special requirements for such ships YES Are the cables lead covered as per Rule YES

E.S.D., if fitted state maker HUGHES location of transmitter FRAME SPACE 39-40 STBD and receiver FRAME SPACE 38-39 PORT.

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.	
			Kilowatts per Generator.	Volts.	Ampères.	Revs. per Min.	TYPE.	MAKER.
MAIN ...	3	SUNDERLAND FORGE.	40	110	364	640	STEAM	SUNDERLAND FORGE & ENG. CO. LTD.
	1	SUNDERLAND FORGE.	40	110	364	800	DIESEL	GLENIFFER.
EMERGENCY ... ROTARY TRANSFORMER								

GENERATOR CABLES.

DESCRIPTION.	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 ...	40	2	19/083	364	404	34	V.C.	L.C.F.B.
" " EQUALISER ...		1	19/083	-	202	17	V.C.	L.C.F.B.
EMERGENCY GENERATOR ...								
ROTARY TRANSFORMER: MOTOR								
" " GENERATOR...								

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

DESCRIPTION.	No. in Parallel per Pole.	Sectional Area or No. and Dia. of Strands, Sq. ins. or sq. mm.	In the Circuit.	Rule.	APPROX. LENGTH (lead plus return feet).	INSULATION.	PROTECTIVE COVERING.
MIDSHIP SECTION PANEL	2	37/103	353	816	572	V.C.	L.C.F.B.
CREW HET SECTION PANEL	1	37/072	200	260	110	V.C.	L.C.F.B.
ENGINE ROOM LIGHTING SECTION.	1	7/064	44	80	50	V.C.	L.C.F.B.
GALLEY GEAR SECTION.	1	37/072	200	260	270	V.C.	L.C.F.B.

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

DESCRIPTION.	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.			
NAVIGATION	1	7/064	30	80	90	V.C.	L.C.
WIRELESS	1	7/064	15	80	80	V.C.	L.C.
MIDSHIP LIGHTING D.B.	1	7/044	20	31	56	RUBBER	L.C.
HET LIGHTING D.B.	1	7/044	15	31	180	RUBBER	L.C.
FORECASTLE LIGHTING D.B.	1	7/044	36	31	368	RUBBER	L.C.F.B.
ENGINE ROOM LIGHTING D.B. (BAT TOP)	1	7/044	9	31	75	RUBBER	L.C.F.B.
ENGINE ROOM AUXILIARIES D.B. N°1	1	7/064	48	80	80	V.C.	L.C.F.B.
ENGINE ROOM AUXILIARIES D.B. N°2	1	19/064	91.5	143	50	V.C.	L.C.F.B.
ENGINE ROOM AUXILIARIES D.B. N°3	1	7/064	64	80	60	V.C.	L.C.F.B.
ENGINE ROOM AUXILIARIES D.B. N°4	1	19/064	78	143	68	V.C.	L.C.F.B.
REFRIGERATOR D.B.	1	7/064	47	80	260	V.C.	L.C.F.B.
GALLEY D.B.	1	7/064	27	80	20	V.C.	L.C.
LAUNDRY D.B.	1	7/064	35	80	230	V.C.	L.C.F.B.
RADAR.	1	7/064	20	80	80	V.C.	L.C.
GYRO	1	7/029	10	15	80	RUBBER	L.C.

ALL IMPORTANT MOTORS TO BE ENUMERATED.

MOTOR CABLES.

	No.	B.H.P.							
STEERING GEAR MOTOR	1	25	1	19/083	195	202	280	V.C.	L.C.F.B.
DOMESTIC REFRIGERATOR	1	5	1	7/064	42	80	260	V.C.	L.C.F.B.
PURIFIERS.	3	3.5	1	7/064	29	80	25	V.C.	L.C.F.B.
F.W. PUMPS	1	3	1	7/044	25	31	260	RUBBER	L.C.F.B.
S.W. PUMPS.	1	3	1	7/044	25	31	40	RUBBER	L.C.F.B.
HET ACCOMMODATION VENT FANS	2	3.75	1	7/064	32.5	80	50	V.C.	L.C.
MIDSHIP ACCOMMODATION VENT FANS	2	1.45	1	7/044	14	31	115	RUBBER	L.C.
ENGINE ROOM VENT FANS	2	2.75	1	7/044	24	31	80	RUBBER	L.C.F.B.
STANDBY F.W. OR SANITARY PUMP	1	3	1	7/044	25	31	40	RUBBER	L.C.F.B.

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.

P.Pro. THE SUNDERLAND FORGE & ENGINEERING CO. LTD. Electrical Contractors. Date 21.12.49

J. O. Shanks
4th Dec

COMPASSES.

Have the compasses been adjusted under working conditions. YES

WILLIAM HAMILTON & CO., LIMITED.

James Haire
Secretary

Builder's Signature.

Date 28 Dec 1949.

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. 13th JUNE 1949

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 installation of this vessel has been fitted on board under special survey tested under working conditions and found satisfactory. The quality of materials and workmanship is good.

NOTE - Electrical equipment has been installed in special compartment in centre castle space. This compartment has been constructed in accordance with plans approved on 21st January 1949.

Noted ext 19/1/50.

*J.P.P.
 4/1/50*

Total Capacity of Generators 160 Kilowatts.

The amount of Fee ...	£ 64 : 0 :	When applied for, <u>RS GRK 19</u>
Travelling Expenses (if any) £	1 : 8 :	

J. M. Gardiner
 Surveyor to Lloyd's Register of Shipping.

Committee's Minute GLASGOW - 5 JAN 1950

Assigned SEE ACCOMPANYING MACHINERY REPORT.

2m.9.46.-Transfer. (MADE AND PRINTED IN ENGLAND.)
 (The Surveyors are requested not to write on or below the space for Committee's Minute.)



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