

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office 2 SEP 1950

Date of writing Report 15th August 1950 When handed in at Local Office 5.9.1950 Port of GLASGOW.No. in Survey held at GREENOCK. Date, First Survey 16th MARCH Last Survey 13th July 1950
Reg. Book. (No. of Visits 9)36839 on the M.V. 'ERLING BORTHEN' Tons { Gross 9074
NetBuilt at PORT GLASGOW. By whom built W^m HAMILTON & CO^{LTD} Yard No. 482 When built 1950

Owners HARRY BORTHEN & CO, A/S Port belonging to OSLO

Installation fitted by MESSRS SUNDERLAND FORGE & ENGINEERING CO^{LTD} When fitted 1950

Is vessel 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

Plans, have they been submitted and approved YES System of Distribution TWO WIRE Voltage of Lighting 110

Heating 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 fitted with a trip switch ✓ Generators, are they compound wound YES, and level compounded under working conditions YES

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 YES Is the compound winding connected to the negative or positive pole

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

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

Position of Generators PORT SIDE OF ENGINE ROOM

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 ADJACENT TO STEAM

GENERATORS.

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 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 400 AMP TRIPLE POLE CIRCUIT BREAKERS FITTED

WITH OVERLOAD AND REVERSE CURRENT TRIPS

and the switch and fuse gear (or circuit breakers) for each outgoing circuit DOUBLE POLE KNIFE PATTERN SWITCHES

WITH FUSES

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

ammeters FOUR voltmeters ✓ synchronising devices. For compound machines in parallel are the ammeters and reversed current

protection devices connected on the pole opposite to the equaliser connection YES Earth Testing, state means provided

EARTH LAMPS.

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

make of fuses SIEMENS 'ZED', are all fuses labelled YES If circuit breakers are provided for the generators, at what

overload do they operate 150% FULL LOAD and at what current do the reversed current protective devices operate 10% - 15% FULL LOAD

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 4.8 VOLTS are the ends of all cables having a sectional

area of 0.01 square inch and above provided with soldering sockets YES 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 No, if so, are they

adequately 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.F.B. CABLES CLIPPED

TO STEELWORK. MACHINERY SPACE - L.C.F.B. CABLES CLIPPED TO TRAY ACCOMMODATION L.C.

CABLES CLIPPED TO WOODWORK.

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 ✓

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 PUMPROOMS: LIGHTING FITTINGS 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 1, whether fixed or portable YES, are they of the carbon arc or of the filament type YES

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'. 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 M.S. 21 location of transmitter FRAME SPACE 39-40 STBD and receiver FRAME SPACE 37-38 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			Revs. per Min.	TYPE.	PRIME MOVER.	MAKER.
			Kilowatts per Generator.	Volts.	Ampères.				
MAIN	3	SUNDERLAND FORGE B.E.C.	40	110	364	640	STEAM.	SUNDERLAND FORGE B.E.C.	
	1	SUNDERLAND FORGE B.E.C.	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	363	404	104	V.C.	L.C.F.B.
" " EQUALISER		1	19/083	-	202	52	V.C.	L.C.F.B.
EMERGENCY GENERATOR								
ROTARY TRANSFORMER: MOTOR								
" " GENERATOR								

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

DESCRIPTION.	No.	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	250	816	646	V.C.	L.C.F.B.
GALLEY SECTION.	1	37/103	200	408	180	V.C.	L.C.F.B.
CREW HET LIGHTING SECTION	1	37/072	200	260	198	V.C.	L.C.F.B.
ENGINE ROOM LIGHTING SECTION	1	7/064	44	80	132	V.C.	L.C.F.B.
SHORE CONNECTION.	1	37/103	200	408	132	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.			
WIRELESS	1	7/064	15	80	132	V.C.	L.C.
NAVIGATION	1	7/064	30	80	140	V.C.	L.C.
BRIDGE DECK STBD LIGHTING D.B.	1	7/044	15	31	52	RUBBER	L.C.
LOWER BRIDGE DECK LIGHTING D.B.	1	7/044	20	31	108	RUBBER	L.C.
POOP DECK PORT LIGHTING D.B.	1	7/044	15	31	138	RUBBER	L.C.
HET LIGHTING D.B.	1	7/044	18	31	294	RUBBER	L.C.
ENGINE ROOM LIGHTING D.B. TOP STBD.	1	7/044	9	31	228	RUBBER	L.C.F.B.
ENGINE ROOM LIGHTING D.B. BOTTOM STBD.	1	7/044	11	31	228	RUBBER	L.C.F.B.
HEATER D.B.	1	7/044	18	31	108	RUBBER	L.C.
GALLEY D.B.	1	7/064	35	80	102	V.C.	L.C.F.B.
ENGINE ROOM AUX. D.B. N° 2.	1	19/064	86	143	180	V.C.	L.C.F.B.
ENGINE ROOM AUX. D.B. N° 3.	1	7/064	61	80	108	V.C.	L.C.F.B.
REFRIG. D.B.	1	7/064	57	80	240	V.C.	L.C.F.B.
LAUNDRY POWER D.B.	1	7/064	71	80	306	V.C.	L.C.F.B.
SEARCHLIGHT (Wiring Only)	1	19/064	-	143	440	V.C.	L.C.F.B.
GYRO COMPASS.	1	7/029	6	15	90	RUBBER	L.C.
RADAR.	1	7/064	20	80	90	V.C.	L.C.
GALLEY RANGE	1	19/064	124	143	246	V.C.	L.C.F.B.
WATER BOILERS. (5kw)	1	7/064	45	80	104	V.C.	L.C.
MID. CALORIFIER	1	7/064	68	80	140	V.C.	L.C.

MOTOR CABLES.

ALL IMPORTANT MOTORS TO BE ENUMERATED.	No.	B.H.P.	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.
STEERING GEAR.	1	25	19/083	190	202	256	V.C.	L.C.F.B.
DOMESTIC REFRIG. PURIFIERS.	1	5	7/064	57	80	96	V.C.	L.C.
SANITARY PUMPS.	3	3.5	7/064	28	31	48	V.C.	L.C.F.B.
ENGINE ROOM VENT FANS.	2	3	7/044	25	31	420	RUBBER	L.C.F.B.
MID. VENT FANS.	2	2.75	7/044	25	31	96	RUBBER	L.C.F.B.
	2	1.45	7/044	13.5	31	152	RUBBER	L.C.

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.

Per Pro. THE SUNDERLAND FORGE & ENGINEERING CO. LTD.

Electrical Contractors.

Date 1st September 1950.

COMPASSES.

Have the compasses been adjusted under working conditions.

YES

For William Hamilton & Co., Limited,

Builder's Signature.

Date 5th Sep 1950.

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.

29th APRIL 1950

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.

Notes sub 20/9/50

Total Capacity of Generators 160 Kilowatts.

The amount of Fee ... £ 64 : 0

When applied for, 25/9/50

Travelling Expenses (if any) £ 1 : 5

When received, 19

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

Committee's Minute.

GLASGOW

6 SEP 1950

Assigned.

See F.E. Machy Rpt Gt 24194

2m.9.40.—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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