

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

22 MAR 1948

Date of writing Report 14.3.48 When handed in at Local Office 19th March 1948 Port of Sunderland

No. in Survey held at Sunderland Date, First Survey 25.11.47 Last Survey 9.3.48
Reg. Book. (Number of Visits 2)

37599 on the M. V. "FERNLAND" Tons {Gross 5564
Net 3300

Built at Sunderland By whom built Bartlam & Sons Ltd. Yard No. 325 When built 1947.8

Owners Fearnley and Eger Port belonging to Oslø (Norwegian)

Electrical Installation fitted by Sunderland Forge & Engineering Co. Ltd. Contract No. 325 When fitted 1948

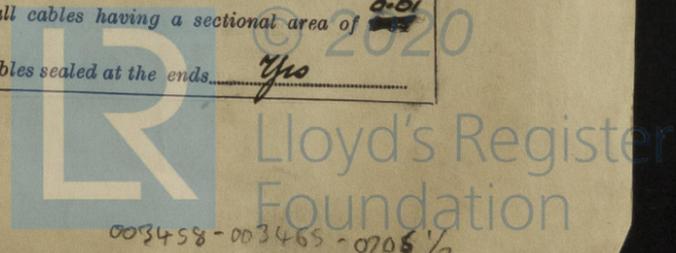
Is vessel fitted for carrying Petroleum in bulk No Is vessel equipped with D.F. Yes E.S.D. Yes Gy.C. Yes Sub.Sig. No Radar Yes

Have plans been submitted and approved Yes System of Distribution Two wire insulated Voltage of supply for Lighting 220

Heating - Power 220 Direct or Alternating Current, Lighting D.C. Power D.C. If Alternating Current state periodicity - Prime Movers,

has the governing been tested and found as per Rule when full load is suddenly thrown on and off Yes Are turbine emergency governors fitted with a trip switch as per Rule - Generators, are they compound wound Yes, are they level compounded under working conditions Yes, if not compound wound state distance between generators - and from switchboard - Where more than one generator is fitted are they 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 Yes Have certificates of test for machines under 100 kw. been supplied Yes and the results found as per rule Yes Are the lubricating arrangements and the construction of the generators as per rule Yes Position of Generators arranged inboard and outboard, fore and aft on auxiliary platform level port side of Engine Room. Auxiliary Generator on workshop platform port side of Engine Room. is the ventilation in way of generators satisfactory Yes are they clear of inflammable material Yes, if situated near unprotected combustible material state distance from same horizontally - and vertically -, are the generators protected from mechanical injury and damage from water, steam and oil Yes, are the bedplates and frames earthed Yes and the prime movers and generators in metallic contact Yes Switchboards, where are main switchboards placed adjacent to aft bulkhead on port side of Engine Room, auxiliary platform level and facing forward. are they in accessible positions, free from inflammable gases and acid fumes Yes, are they protected from mechanical injury and damage from water, steam and oil Yes, if situated near unprotected combustible material state distance from same horizontally - and vertically -, what insulation material is used for the panels Indanox (Ebony finish), 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 frame effectually earthed Yes Is the construction as per Rule Yes, including accessibility of parts Yes, absence of fuses on the back of the board Yes, individual fuses to pilot and earth lamps, voltmeters, etc., Yes locking of screws and nuts Yes, labelling of apparatus and fuses Yes, fuses on the "dead" side of switches Yes Description of Main Switchgear for each generator and arrangement of equaliser switches 700 Amp. Triple pole mag. Blowout C.B's, Time lags, Reverse current and Overload trips. Auxiliary Generator Double Pole Double Throw Quick Break Knife Switch and Double Pole Fuses. and for each outgoing circuit Double Pole mag. Blowout C.B's with Overload trips and Time lags. Double Pole Single Throw Quick Break Knife Switches and Double Pole Fuses.

Are compartments containing switchboards composed of fire-resisting material or lined as per Rule Yes Instruments on main switchboard 6 ammeters 3 voltmeters - synchronising devices. For compound machines in parallel is the ammeter connected on the pole opposite to the equaliser connection Yes Earth Testing, state means provided Earth lamps connected to 'E' thro switches and fuses. Switches, Circuit Breakers and Fuses, are they as per Rule Yes, are the fuses an approved type Yes, are all fuses labelled as per Rule Yes If circuit breakers are provided for the generators, at what overload current did they open when tested 25%, are the reversed current protection devices connected on the pole opposite to the equaliser connection Yes, have they been tested under working conditions, and at what current did they operate 5% Joint Boxes, Section Boards and Distribution Boards, is the construction and position as per Rule Yes Cables, are they insulated and protected as per the appropriate Tables of the Rules Yes, if otherwise than as per Rule are they of an approved type Yes, state maximum fall of pressure between bus bars and any point under maximum load < 13.2v, are the ends of all cables having a sectional area of 0.01 square inch and above provided with soldering sockets Yes Are paper insulated and varnished cambric insulated cables sealed at the ends Yes



with insulating compound or waterproof insulating tape. 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 cables laid under machines or floorplates. No, if so, are they adequately protected. Yes. Are cables in machinery spaces, galleys, laundries, etc., lead covered. Yes and run in conduit. Yes. State how the cables are supported and protected. L.b. and L.b.A. cables in Engine Room clipped to solid and perforated metal tray plates with steel cover plates up to 4 feet above auxiliary platform level. Fore and aft main cables clipped to perforated steel tray plates and covered with perforated steel tray plates in lower deck spaces and tonnage openings. V.S.R. cables in steel conduit, and L.b. cables in accommodation chained to wood grounds.

Are all lead sheaths, armouring and conduits effectually bonded and earthed. Yes. Refrigerated chambers, are the cables and fittings as per Rule. —. 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 and with what material. Lead. Alternative Lighting, are the groups of lights in the engine and boiler rooms arranged as per Rule. Yes. Emergency Supply, state position. — and method of control. —

Navigation Lamps, are they separately wired. Yes controlled by separate double pole switches. Yes 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. Secondary Batteries, are they constructed and fitted as per Rule. —, are they adequately ventilated. — what is the battery capacity in ampere hours. —

Fittings, are all fittings on weather decks, in stokeholds and engine rooms and wherever exposed to drip or condensed moisture, weatherproof. Yes. Are fittings installed where readily combustible materials or inflammable or explosive dust or gases are likely to be present. No, if so, how are they protected. —

and where are the controlling switches fitted. —, are all fittings suitably ventilated. Yes, are all fittings and accessories constructed and installed as per Rule. Yes. Searchlight Lamps, No. of. —, whether fixed or portable. —, are their fittings as per Rule. —. Heating and Cooking, is the general construction as per Rule. —

are the frames effectually earthed. —, are heaters in the accommodation of the convection type. —. Motors, are all motors constructed and installed as per Rule. Yes and placed in well-ventilated compartments in which inflammable gases cannot accumulate and free from damage from water, steam and oil. Yes, if situated near unprotected combustible material state minimum distance from same horizontally. — and vertically. —. Are motors coupled to oil fuel transfer and unit 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 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 the cartridge type. —

are they of an approved type. —. 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. —. Spare Gear, if the vessel is for open sea service have spares been provided as per Rule. Yes, are they 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	RATED AT				DRIVEN BY	WHERE DRIVEN BY AN INTERNAL COMBUSTION ENGINE.	
		Kilowatts.	Volts.	Ampères.	Revs. per Min.		Fuel Used.	Flash Point of Fuel.
MAIN	3	150	220	683	600	Diesel Engine.	Heavy oil. Above 150°F.	
EMERGENCY	1	15	220	68.3	1000	Diesel Engine.	Heavy oil. Above 150°F.	
ROTARY TRANSFORMER								

GENERATOR CABLES.

DESCRIPTION.	KILOWATTS.	CONDUCTORS.		MAXIMUM CURRENT IN AMPERES.		APPROX. LENGTH (lead plus return feet).	INSULATED WITH.	HOW PROTECTED.
		No. in Parallel Per Pole.	Sectional Area or No. and Dia. of Strands. Sq. ins. or sq. mm.	In the Circuit.	Rule.			
MAIN GENERATOR	No 1	150	2	34/103	683	770	120	V.L. Lead covered.
" " EQUALISER			1	34/103	342	385	120	V.L. Lead covered.
" " "	No 2	150	2	34/103	683	770	72	V.L. Lead covered.
" " "			1	34/103	342	385	72	V.L. Lead covered.
" " "	No 3	150	2	34/103	683	770	90	V.L. Lead covered.
" " "			1	34/103	342	385	90	V.L. Lead covered.
EMERGENCY GENERATOR		15	1	19/052	68	64	18	V.S.R. Steel conduit
ROTARY TRANSFORMER: MOTOR								
" " GENERATOR								

MAIN DISTRIBUTION CABLES.

DESCRIPTION.	CONDUCTORS.		MAXIMUM CURRENT IN AMPERES.		APPROX. LENGTH (lead plus return feet).	INSULATED WITH.	HOW PROTECTED.
	No. in Parallel Per Pole.	Sectional Area or No. and Dia. of Strands. Sq. ins. or sq. mm.	In the Circuit.	Rule.			
AUX. SWITCHBOARDS AND SECTION BOARDS ...							
Main Switchboard to Panel 'A' Engine Room.	1	7/064	66	75	270	V.L.	Lead covered & Armoured.
Main Switchboard to Panel 'B' Engine Room.	1	7/064	58	75	192	V.L.	Lead covered & Armoured.
Main Switchboard to Forward Winch Ring main.	2	0.2	493	592	560	Pyralinas.	
Main Switchboard to aft Winch Ring main.	2	0.15	378	492	620	Pyralinas.	
Main Switchboard to Deck Box A Upper Deck Port.	1	19/044	49	53	130	V.S.R.	Lead covered & Armoured.
Main Switchboard to Deck Box C Midships.	1	7/036	18.4	24	130	V.S.R.	Lead covered & Armoured.
Main Switchboard to Steering Gear Exchange and	1	19/064	114	135	60	V.L.	Lead covered & Armoured.
Main Switchboard to Auxiliary Switchboard	1	19/083		191	120	V.L.	Lead covered & Armoured.

LIGHTING AND HEATING, ETC., CABLES.

WIRELESS	1	7/064	15	46	360	V.S.R.	Lead covered.
NAVIGATION LIGHTS	1	7/064	12	46	360	V.S.R.	Lead covered.
LIGHTING AND HEATING							
Section Box A to Upper Deck Port. Dis. Box A1	1	7/036	15	24	15	V.S.R.	Lead covered.
Section Box A to Upper Deck Star. Dis. Box A2	1	7/036	11.8	24	150	V.S.R.	Lead covered.
Section Box A to Passenger Deck Port. Dis. Box A3	1	7/036	9.4	24	75	V.S.R.	Lead covered.
Section Box A to Passenger Deck Star. Dis. Box A4	1	7/036	12.5	24	180	V.S.R.	Lead covered.
Section Box A to Forward Main. Dis. Box	1	7/036	1.6	24	440	V.S.R.	Lead covered & Armoured.
Section Box C to After Truck House. Dis. Box C1	1	7/029	5.4	15	270	V.S.R.	Lead covered & Armoured.
Section Box C to Forward Binick P. No. Dis. Box C2	1	7/029	9.0	15	270	V.S.R.	Lead covered & Armoured.
Section Box C to Forward Truck House. Dis. Box C3	1	7/029	9.0	15	270	V.S.R.	Lead covered & Armoured.
Aux. Switchboard to lower Deck. Dis. Box 'D1'	1	7/064	17.5	46	450	V.S.R.	Lead covered & Armoured.
lower Deck. Dis. Box 'D1' to Cross Upper Deck 'D2'	1	7/064	15	46	20	V.S.R.	Lead covered & Armoured.
Main Switchboard to Passenger Deck Dis. Box 'E'	1	19/083	79	191	480	V.S.R.	Lead covered & Armoured.
Main Switchboard to lower Deck Dis. Box 'F'	1	7/036	24	24	450	V.S.R.	Lead covered & Armoured.
Main Switchboard to deck Cabal Projector.	1	19/082	4.0	64	660.	V.S.R.	Conduit.
Auxiliary switchboard to E.R. lighting Dis. Box 'G1'	1	7/064	20	46	18	V.S.R.	Lead covered & Armoured.
E.R. lighting Dis. Box 'G1' to E.R. lighting Dis. Box 'G2'	1	7/064		46	140	V.S.R.	Lead covered & Armoured.

MOTOR CABLES.

ALL IMPORTANT MOTORS TO BE ENUMERATED.	No.	B.H.P.	CONDUCTORS.		MAXIMUM CURRENT IN AMPERES.		APPROX. LENGTH (lead plus return feet).	INSULATED WITH.	HOW PROTECTED.
			No. in Parallel Per Pole.	Sectional Area or No. and Dia. of Strands. Sq. ins. or sq. mm.	In the Circuit.	Rule.			
Compressor.	1	90	1	34/103	333	385	120	V.L.	Lead covered & Armoured.
Veg. Oil Pump.	1	50	1	19/083	187	191	168	V.L.	Lead covered & Armoured.
Forward Lubricating Pumps.	2	36	1	19/083	136	191	336/336	V.L.	Lead covered & Armoured.
A.H. Circulating Pumps.	2	33	1	19/064	125	135	354/354	V.L.	Lead covered & Armoured.
Ballast Pump.	1	23	1	19/064	89	135	180	V.L.	Lead covered & Armoured.
Bilge Pump.	1	16	1	7/064	63	75	138	V.L.	Lead covered & Armoured.
Turning Gear.	1	12	1	7/064	48	75	114	V.L.	Lead covered & Armoured.
Transfer Pumps.	2	5	1	7/036	21	24	96/168	V.S.R.	Lead covered & Armoured.
Purifiers.	2	3.5	1	7/036	16	24	90/180	V.S.R.	Lead covered & Armoured.
Boiler.	1	3	1	7/036	13	24	168	V.S.R.	Lead covered & Armoured.
Workshop motor.	1	3	1	7/036	13	24	60	V.S.R.	Lead covered & Armoured.
Sanitary & A.H. Pumps.	3	1.5	1	7/036	8	24	90/162/90	V.S.R.	Lead covered & Armoured.
Refrig. Circulating Pump.	1	5	1	7/036	21	24	120	V.S.R.	Lead covered & Armoured.
Windlass.	1	49	1	0.1	166	191	10	Pyralinas.	
Forward Winches No 1 and 2	2	46	1	0.1	162	191	30	Pyralinas.	
Forward Winches No 3 and 4	2	46	1	0.1	162	191	30	Pyralinas.	
Forward Winches No 5 and 6	2	46	1	0.1	162	191	30	Pyralinas.	
Forward Winches No 7 and 8	2	46	1	0.1	162	191	300	Pyralinas.	
Aft Winches No 9 and 10	2	46	1	0.1	162	191	60	Pyralinas.	
Aft Winches No 11 and 12	2	46	1	0.1	162	191	30	Pyralinas.	
Aft Winches No 13 and 14	2	46	1	0.1	162	191	30	Pyralinas.	
Washing Winch.	1	46	1	0.1	162	191	115	Pyralinas.	
Steering Gear Motors.	2	30	1	19/064	114	135	30/460	V.L.	Lead covered & Armoured.
Schmidt Fan E1.	1	3	1	7/036	13	24	30	V.L.	Lead covered.
Exhaust Fan E2.	1	1.5	1	7/029	7	15	50	V.S.R.	Lead covered.
Pump Unit P1.	1	1.5	1	7/029	7	15	30	V.S.R.	Lead covered.
Pump Unit P2.	2	3.0	1	7/036	13	24	30/15	V.S.R.	Lead covered.
Pump Unit P3.	2	3.0	1	7/036	13	24	30/18	V.S.R.	Lead covered.
Pump Unit P4.	2	3.0/1.5	1	7/036/7/029	13/5/7	24/15	35/28	V.S.R.	Lead covered.
Exhaust Fan E3.	1	1.5	1	7/029	7	15	35/24	V.S.R.	Lead covered.

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.

Sunderland Forge & Ry. Works
 ENGINE ROOMS, POWER & LIGHTING & MAIN FUEL BOARD
 J. J. Curran Electrical Engineers.

Date 15.3.1947

COMPASSES.

Minimum distance between electric generators or motors and standard compass 18 feet

Minimum distance between electric generators or motors and steering compass -

The nearest cables to the compasses are as follows:-

A cable carrying 0.14 Ampères inside ~~feet~~ standard compass 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 course in the case of the standard compass, and degrees on course in the case of the steering compass.

J. J. Curran Builder's Signature. Date

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 25.9.1947.

Certificates. Are certificates of test for motors engaged on essential 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 of this vessel has been installed under special survey and the arrangements are in accordance with or equivalent to those shown on the approved plans, the Secretary's letters and the Rules for Electrical Equipment.

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

On completion the equipment was operated under working conditions, the protective devices of the circuit breakers 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.

Note: see 8/4/48

Total Capacity of Generators 465 Kilowatts.

The amount of Fee ...	TOTAL	101 : 12 : 6	When applied for, 1948
Sunderland a/c.		81 : 6 : 0	When received.
Manchester a/c		20 : 6 : 6	
Travelling Expenses (if any) £			

J. J. Curran
 Surveyor to Lloyd's Register of Shipping.

FRI, 23 APR 1948

Committee's Minute

Assigned See F.E. maly rpt.

50433 - Transfer. (MADE AND PRINTED IN ENGLAND.) (The Surveyors are requested not to write on or below the space for Committee's Minute.)

