

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office 24 MAR 1944

Date of writing Report 22 MAR 1944 When handed in at Local Office 22 MAR 1944 Port of NEWCASTLE - ON TYNE

No. in Survey held at WALKER - ON - TYNE Date, First Survey 11-2-44 Last Survey 9-3-19 44
Reg. Book. on the "EMPIRE ABBEY." Tons {Gross 7032
Net 4732

Built at WALKER - ON - TYNE By whom built SHIPBUILDING CORP. LTD. TYNE YARD No. 6 When built 1944
Owners MINISTRY OF WAR TRANSPORT Port belonging to NEWCASTLE - ON - TYNE

Electrical Installation fitted by SUNDERLAND FORCE & ENGINEERING CO. LTD. Contract No. 6 When fitted 1944

Is vessel fitted for carrying Petroleum in bulk. — Is vessel equipped with D.F. YES E.S.D. YES Gy.C. YES Sub.Sig. —

Have plans been submitted and approved YES System of Distribution TWO WIRE INSULATED Voltage of supply for Lighting 110

Heating — Power 110 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 — 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 ENGINE ROOM. STBD OF MAIN ENGINE, 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 ENGINE ROOM ON AFT BULKHEAD. STBD, 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 —, 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 350 AMPERE D.P. CIRCUIT BREAKERS WITH O/L, TIME LAGS, AND REVERSE CURRENT TRIPS, 300 AMPERE T.P. DOUBLE THROW SWITCH, and for each outgoing circuit DOUBLE POLE, QUICK BREAK SWITCHES AND DOUBLE POLE FUSES. OTHER CIRCUITS AS ABOVE WITH DOUBLE THROW SWITCHES.

Are compartments containing switchboards composed of fire-resisting material or lined as per Rule YES Instruments on main switchboard 3 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 THROUGH 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 40%, 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 10% 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 —, state maximum fall of pressure between bus bars and any point under maximum load 4.4 V., 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 —

with insulating compound..... or waterproof insulating tape..... 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....., if so, are they adequately protected..... Are cables in machinery spaces, galleys, laundries, etc., lead covered..... **YES** or run in conduit..... State how the cables are supported and protected. **V.I.R. CABLES IN CONDUIT. LEAD COVERED CABLES. CLIPPED TO PERFORATED TRAY PLATES, AND ON WOOD GROUNDS IN ACCOMMODATION.**

Are all lead sheaths, armoring and conduits effectually bonded and earthed..... **YES**. Refrigerated chambers, are the cables and fittings as per Rule..... **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** 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....., if so, how are they protected.....

and where are the controlling switches fitted....., are all fittings suitably ventilated.....

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.....

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	33	110	300	640	STEAM ENGINE.		
EMERGENCY								
ROTARY TRANSFORMER								

GENERATOR CABLES.

DESCRIPTION.	KILOWATTS.	CONDUCTORS.		MAXIMUM CURRENT IN AMPERES.		APPROX. LENGTH (load 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	3X33	1	37/083	300	296	30/24/36	V.C.	L.C.
" EQUALISER		1	19/083		191		V.C.	L.C.
EMERGENCY GENERATOR								
ROTARY TRANSFORMER: MOTOR								
" GENERATOR								

MAIN DISTRIBUTION CABLES.

DESCRIPTION.	CONDUCTORS.		MAXIMUM CURRENT IN AMPERES.		APPROX. LENGTH (load 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							
FORD LIGHTING SECTION BOARD	1	19/083	40	118	190	V.I.R.	CONDUIT
AFT POWER LIGHT.	1	19/083	40	118	195	V.I.R.	"
FORD COOLER FANS	2	19/064	132	166	216	V.I.R.	"
"	2	19/064	132	166	216	V.I.R.	"
AFT	2	19/064	132	166	450	V.I.R.	"

LIGHTING AND HEATING, ETC., CABLES.

WIRELESS	1	19/064	34.5	83	450	V.I.R.	CONDUIT.
NAVIGATION LIGHTS	1	7/029	1.5	15	400	V.I.R.	"
LIGHTING AND HEATING	ALTERNATE SUPPLY FROM SALOON SECTION BOARD.						
FORCASTLE LIGHTING. DIS. FUSE BOARD	1	1/064	2.5	10	130	V.I.R.	CONDUIT.
FORD CARGO	1	7/036	9.5	24	170	V.I.R.	"
OFFICERS	1	7/044	25.3	31	60	V.I.R.	"
FORD REFRIG.	1	7/029	9.8	15	60	V.I.R.	"
ENGINEERS	1	7/036	21.8	24	60	V.I.R.	"
"	1	7/036	17.2	24	140	V.I.R.	"
AFT CARGO	1	7/036	7.5	24	90	V.I.R.	"
CREW ACCOM.	1	7/064	24.8	46	96	V.I.R.	"
ENGINE ROOM	1	7/032	28	37	60	V.I.R.	"
AFT REFRIG.	1	7/082	7.	37	18	V.I.R.	"

MOTOR CABLES.

ALL IMPORTANT MOTORS TO BE ENUMERATED.	No.	B.H.P.						
CIRCULATING PUMP MOTOR	1	10	1	19/044	80	84	48	V.C. L.C.
FORD COOLING FAN No. 1	1	8'4	1	7/064	66	75	30	V.C. L.C.
" No. 2	1	8'4	1	7/064	66	75	30	V.C. L.C.
" No. 3	1	8'4	1	7/064	66	75	30	V.C. L.C.
" No. 4	1	8'4	1	7/064	66	75	30	V.C. L.C.
AFT. No. 1	1	8'4	1	7/064	66	75	30	V.C. L.C.
" No. 2	1	8'4	1	7/064	66	75	30	V.C. L.C.
REFRIGERATOR	1	5	1	19/064	46	225		V.I.R. L.C. & A.

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.

J. S. Gurney

Electrical Engineers.

Date 14-3-1944

COMPASSES.

Minimum distance between electric generators or motors and standard compass..... 58 FEET.

Minimum distance between electric generators or motors and steering compass..... 50 FEET.

The nearest cables to the compasses are as follows:—

A cable carrying .14 Ampères INSIDE feet from standard compass feet from steering compass.

A cable carrying .14 Ampères feet from standard compass INSIDE 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 NIL degrees on EVERY course in the case of the steering compass.

For and on behalf of
 SHIPBUILDING CORPORATION LIMITED (TYNE BRANCH)

Builder's Signature.

Date 25 March 1944

Is this installation a duplicate of a previous case..... YES If so, state name of vessel EMPIRE FLAG

Plans. Are approved plans forwarded herewith..... If not, state date of approval..... 9-4-43

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

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 in conformity with the Society's Rules and Regulations, and the arrangements are in accordance with or equal to those shown on the approved plans.

Materials used are of good quality and the workmanship is satisfactory.

On completion, the insulation resistance was good and the generators operated under working conditions with satisfactory results.

The equipment, as installed, is, in my opinion, suitable for a blessed vessel.

J. H. H.
5.4.44

Total Capacity of Generators..... 99 Kilowatts.

The amount of Fee ... Sunderland 2 £ 40 : 10 :
 INCLUDING SPECIFICATION.
 Travelling Expenses (if any) £ : :
 When applied for, 22 MAR 1944
 When received,19.....

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

Committee's Minute..... TUES. 4 APR 1944

Assigned..... See p. machine etc.

5m.4.36—Transfer. (MADE AND PRINTED IN ENGLAND.)
 (The Surveyors are requested not to write on or below the space for Committee's Minute.)