

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office.

of writing Report... 23rd Sept. 42 When handed in at Local Office... OCT. 1942 Port of Sunderland

in Survey held at Sunderland Date, First Survey 8th May Last Survey 20th Sept. 1942
Reg. Book. and Walsend. (Number of Visits... 11...)487 on the M.V. "EMPIRE WORDSWORTH" Tons {Gross 989.1...
Net 59.12...}

Built at Sunderland By whom built Sir J. Laing & Co. Ltd. Yard No. 742 When built 1942

Owners Ministry of War Transport Port belonging to Sunderland

Electrical Installation fitted by The Sunderland Eng. Co. Ltd. Contract No. 742 When fitted 1942

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

Plans been submitted and approved. System of Distribution Two wire insulated Voltage of supply for Lighting 110

Power 110 Direct or Alternating Current, Lighting Power If Alternating Current state periodicity Prime Movers,

the governing been tested and found as per Rule when full load is suddenly thrown on and off Are turbine emergency governors fitted with a

switch as per Rule Generators, are they compound wound, are they level compounded under working conditions,

not compound wound state distance between generators. and from switchboard. Where more than one generator is fitted are they

arranged to run in parallel, are shunt field regulators provided 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

for machines under 100 kw. been supplied and the results found as per rule Are the lubricating arrangements and the construction

the generators as per rule Position of Generators Engine room starboard side

is the ventilation in way of generators satisfactory are they clear of inflammable material, if situated

or unprotected combustible material state distance from same horizontally and vertically, are the generators protected from mechanical

injury and damage from water, steam and oil, are the bedplates and frames earthed and the prime movers and generators in metallic

contact Switchboards, where are main switchboards placed Engine room starboard side

forward

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

and oil, if situated near unprotected combustible material state distance from same horizontally and vertically, what insulation

material is used for the panels "Economy Linoleum", if of synthetic insulating material is it an Approved Type, if of

non-insulating material (slate or marble) are all conducting parts insulated therefrom as per Rule Is the frame effectually earthed

the construction as per Rule, including accessibility of parts, absence of fuses on the back of the board, individual fuses

pilot and earth lamps, voltmeters, etc., locking of screws and nuts, labelling of apparatus and fuses, fuses on the "dead"

ends of switches Description of Main Switchgear for each generator and arrangement of equaliser switches Double pole

knife switch and double pole fuse.

for each outgoing circuit Double pole double throw knife switch and

double pole fuse.

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

Three voltmeters, synchronising devices. For compound machines in parallel is the ammeter connected on the pole opposite to the

equaliser connection Earth Testing, state means provided E lamps coupled to E through ear. fuses

Circuit Breakers and Fuses, are they as per Rule, are the fuses an approved type, are all fuses labelled as

per Rule If circuit breakers are provided for the generators, at what overload current did they open when tested, are the reversed current

protection devices connected on the pole opposite to the equaliser connection, have they been tested under working conditions, and at what current

they operate Joint Boxes, Section Boards and Distribution Boards, is the construction and position as per Rule

ables, are they insulated and protected as per the appropriate Tables of the Rules, if otherwise than as per Rule are they of an approved type,

the maximum fall of pressure between bus bars and any point under maximum load 4.44, are the ends of all cables having a sectional area of 0.04

square inch and above provided with soldering sockets Are paper insulated and varnished cambric insulated cables sealed at the ends.

with insulating compound or waterproof insulating tape 7/2. 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 7/2, are cables laid under machines or floorplates 7/2, if so, are they adequately protected 7/2. Are cables in machinery spaces, galleys, laundries, etc., lead covered 7/2 or run in conduit 7/2. State how the cables are supported and protected L.C.A.B. cables run in hardwood cleats under fire and off gangway.
Ans. fude L.C.A.B. run in galv. pipe with expansion joints on deck L.C.A.B.
cables clipped to iron or to surface in machinery spaces. L.C. cables clipped up in accom.
 Are all lead sheaths, armouring and conduits effectually bonded and earthed 7/2. Refrigerated chambers, are the cables and fittings as per Rule 7/2.
 Are all cables passing through decks and watertight bulkheads provided with deck tubes or watertight glands 7/2, where unarmoured cables pass through beams, etc., are the holes effectively bushed 7/2 and with what material Lead or fibre. Alternative Lighting, are the groups of lights in the engine and boiler rooms arranged as per Rule 7/2. Emergency Supply, state position 7/2 and method of control 7/2.
 Navigation Lamps, are they separately wired 7/2 controlled by separate double pole switches 7/2 and fuses 7/2. Are the switches and fuses in a position accessible only to the officers on watch 7/2, is an automatic indicator fitted 7/2. Secondary Batteries, are they constructed and fitted as per Rule 7/2, are they adequately ventilated 7/2 what is the battery capacity in ampere hours 7/2.
 Fittings, are all fittings on weather decks, in stokeholds and engine rooms and wherever exposed to drip or condensed moisture, weatherproof 7/2. Are fittings installed where readily combustible materials or inflammable or explosive dust or gases are likely to be present 7/2, if so, how are they protected flaming lighting fittings installed in stokehold space
and where the controlling switches fitted in accommodation space, are all fittings suitably ventilated 7/2.
 are all fittings and accessories constructed and installed as per Rule 7/2. Searchlight Lamps, No. of 7/2, whether fixed or portable 7/2, are their fittings as per Rule 7/2. Heating and Cooking, is the general construction as per Rule 7/2.
 are the frames effectually earthed 7/2, are heaters in the accommodation of the convection type 7/2. Motors, are all motors constructed and installed as per Rule 7/2 and placed in well-ventilated compartments in which inflammable gases cannot accumulate and free from damage from water, steam and oil 7/2, if situated near unprotected combustible material state minimum distance from same horizontally 7/2 and vertically 7/2. 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 7/2.
 Have motors of 100 BHP and over been inspected by the Surveyors during manufacture and testing 7/2. Have certificates of test for motors under 100 BHP intended for essential services been supplied and the results found as per Rule 7/2. Control Gear and Resistances, are they constructed and fitted as per Rule 7/2. Lightning Conductors, where required are they fitted as per Rule 7/2. 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 7/2, are all fuses of the cartridge type 7/2 are they of an approved type 7/2. Are the fittings for pump rooms, tween deck spaces, etc., in accordance with the special requirements for such ships 7/2. Are the cables lead covered as per Rule 7/2. Spare Gear, if the vessel is for open sea service have spares been provided as per Rule 7/2, are they suitably stored in dry situations 7/2. Insulation Tests, has the insulation resistance of all circuits and apparatus been tested and found satisfactory 7/2.

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	2	20	110	182	750	Single cylinder steam engines		
	1	20	110	182	750	Steam engines		
EMERGENCY						Five cylinder diesel engine	Fuel 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 GENERATORS	3 x 20	1	37/072	182	246	34/10/6	V.C.	L.C.A.B.
" " EQUALISER								
EMERGENCY GENERATOR								
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							
Midship t.b. Gangway Feed	1	37/072	166	246	680	V.C.	L.C.A.B.
Midship t.b. Gangway Feed	1	37/072	166	246	680	do.	do.
Off t.b.	1	19/064	108	135	160	do.	do.
Engine Room t.b.	1	19/064	97	135	120	do.	do.
Engine Room t.b. t.b.	1	7/064	2022	75	80/200	do.	do.

LIGHTING AND HEATING, ETC., CABLES.

WIRELESS	1	7/064	34	46	80	V.I.R.	L.C.
NAVIGATION LIGHTS	1	7/036	5	24	80	do.	do.
LIGHTING AND HEATING							
Off t.b. t.b.	1	7/064	19	31	30	do.	do.
W.T. t.b. t.b.	1	7/064	34	46	80	do.	do.
Lower t.b. t.b.	1	7/064	25	31	30	do.	do.
Camp t.b. t.b.	1	7/064	14	31	30	do.	do.
E.S.O. t.b. t.b.	1	7/036	12	24	80	do.	do.
Bridge t.b. t.b.	1	7/036	15	24	80	do.	do.
E.S.O. t.b. t.b.	1	7/036	12	24	400	do.	do. in pipe
2 Batt. t.b. t.b.	1	7/064	5	10	80	do.	do.
Upper t.b. t.b. t.b.	1	7/064	15	31	140	do.	do.
Upper t.b. t.b. t.b.	1	7/029	15	15	50	do.	do.
Prop. t.b. t.b. t.b.	1	7/044	13	31	150	do.	do.
Prop. t.b. t.b. t.b.	1	7/029	13	15	70	do.	do.
Imag. t.b. t.b.	1	7/029	10	15	120	do.	do.
App. Cargo t.b. t.b.	1	7/029	2	15	140	do.	do.

MOTOR CABLES.

ALL IMPORTANT MOTORS TO BE EXAMINATED.	No.	B.H.P.						
Vent. Fan (off mid. t.b.)	1	3	1	7/044	25	31	100	V.I.R. L.C.A.B.
Vent. Fan (off aft t.b.)	1	4	1	7/052	35	37	140	do.
Engine	1	3	1	7/044	25	31	20	do.
Boiler	1	2	1	7/036	17	24	18	do.
Boiler	1	1 1/2	1	7/029	13	15	80	do.
Oil Pump	1	2	1	7/036	17	24	120	do.
Oil Pump	1	1	1	7/029	9	15	120	do.
Boiler Room Fan	1	3/4	1	7/044	7	31	100	do.
Fuel Pumping Pump	1	1	1	7/029	9	15	120	do.
Engine Running Motor	1	12	1	19/064	100	135	100	V.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.

P. PROTH & SUNDEN LTD. & ENGINEERING CO. LTD.

Electrical Engineers.

Date 25-9-1942

H. J. Gurney

COMPASSES.

Minimum distance between electric generators or motors and standard compass 266 feet

Minimum distance between electric generators or motors and steering compass 264 feet

The nearest cables to the compasses are as follows:—

A cable carrying .14 Ampères on the ~~from~~ standard compass 7 feet from steering compass.

A cable carrying .14 Ampères 7 feet from standard compass on the ~~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 $\frac{7}{10}$

Has the effect of switching on and off circuits, motors and other electro-magnetic apparatus within the vicinity of the compasses been noted $\frac{7}{10}$

The maximum deviation due to electric currents was found to be $\frac{1}{2}$ degrees on Every course in the case of the

standard compass, and $\frac{1}{2}$ degrees on Every course in the case of the steering compass.

SIR JAMES LAING & SONS LIMITED

Builder's Signature.

Date 28.9.42

J. W. Thompson

Assistant Manager.

Is this installation a duplicate of a previous case. $\frac{7}{10}$ If so, state name of vessel

Plans. Are approved plans forwarded herewith. $\frac{7}{10}$ If not, state date of approval 14/2/42

Certificates. Are certificates of test for ~~motors engaged on essential services~~ and generators forwarded herewith $\frac{7}{10}$

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 in accordance with the approved plans and with the specification. The installation of an additional generating set has been authorised and the set and necessary switchgear have been fitted under special survey. The materials used are of good quality and the workmanship is good. On completion the equipment was operated under working conditions with satisfactory results and the insulation resistance of all circuits was measured and found good. This equipment is in my opinion suitable for a classed vessel carrying petroleum in bulk.

Noted
12/10/42

Total Capacity of Generators 60 Kilowatts.

The amount of Fee £ 35 : 12/6 : 28 Sep 1942
(incl. Specimen)
Travelling Expenses (if any) £ : :
When received. 19

G. Harrison

Surveyor to Lloyd's Register of Shipping.

FRI 16 OCT 1942

Committee's Minute

Assigned See Std. No. 33498

5m.4.38.—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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Foundation