

# REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL) 8 - OCT 1947  
Received at London Office.....

Date of writing Report... 30. 9. 47 When handed in at Local Office... 6. 10. 47 Port of BARROW

No. in Survey held at BARROW Date, First Survey 27. 8. 46 Last Survey 21. 9. 19 47  
Reg. Book. (Number of Visits... 25.....)

18679 on the T.S.M.V. "ACCRA" Tons { Gross... 11,600.  
Net... 6,448.

Built at Barrow - in - Furness By whom built Vickers-Armstrongs, Ltd. Yard No. 948 When built 1947

Owners Elder Dempster Lines, Ltd. Port belonging to Liverpool

Electrical Installation fitted by Vickers-Armstrongs, Ltd. Contract No. 948 When fitted 1947

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.

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

Heating 220 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 Engine Room Floor Forward

, 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 On Flat over Generators.

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 "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 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 Positive S.P. Circuit

Breaker with M.B.O. Electrically Operated 1500 Amp with O/L and R/C shunt trip, and inter-

locking switches. Negative & Equaliser hand operated with O/L & time lag shunt trip & inter-

locking switches. Hand operated Circuit Breakers D.P. M.B.O. with O/L and time lags

Are compartments containing switchboards composed of fire-resisting material or lined as per Rule Yes Instruments on main switchboard 21

ammeters 2 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 Lamp fused & switched, between each pole & earth

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 1300 Amps, 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 125/140 Amps 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 8.89 Volts, are the ends of all cables having a sectional area of 0.04

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



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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. Yes, if so, are they adequately protected. Yes. Are cables in machinery spaces, galleys, laundries, etc., lead covered. Yes or run in conduit. State how the cables are supported and protected. Vertical runs clipped to bulkheads or metal cable trays. Cables overhead clipped to metal cable trays. Protected as necessary by galvanised sheet steel guards.

Are all lead sheaths, armouring 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 effectually bushed. Yes and with what material. Brass. Alternative Lighting, are the groups of lights in the engine and boiler rooms arranged as per Rule. Yes. Emergency Supply, state position. Engine Casing at Boat Deck Level and method of control. Hand operated circuit breakers and change over switches. 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. Yes, are they adequately ventilated. Yes what is the battery capacity in ampere hours. 65

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. None, whether fixed or portable. - are their fittings as per Rule. - 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. - 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	4	275	220	1250	410	Diesel Engine	Sp. G. 0.93 at 60° 168° F	
EMERGENCY	1	50	220	227	1000	Diesel Engine	do. do.	
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	275	2	91/.103	1250	1476	88	V.C.	Lead covered.
" EQUALISER		1	91/.103	-	738	44	V.C.	Lead covered.
" Shunt		1	7/.064	-	46	44	V.I.R.	Lead covered.
EMERGENCY GENERATOR	50	1	37/.072	227	246	40	V.C.	Lead covered.
ROTARY TRANSFORMER MOTOR SHUNT		1	7/.036	-	24	20	V.I.R.	Lead covered.
" GENERATOR							L.C.	

MAIN DISTRIBUTION CABLES.

DESCRIPTION.	No. in Parallel Per Pole.	Sectional Area or No. and Dia. of Strands. Sq. ins. or sq. mm.	MAXIMUM CURRENT IN AMPERES.		APPROX. LENGTH (lead plus return feet).	INSULATED WITH.	HOW PROTECTED.
			In the Circuit.	Rule.			
AUX. SWITCHBOARDS AND SECTION BOARDS ...							
Passenger Lighting Panel	1	37/.103	320	385	138	V.C.	Lead covered.
Domestic Equipment Panel	2	61/.093	828	928	120	"	"
Galley Panel	2	61/.103	1010	1080	120	"	"
Winch Panel Aft	1	37/.103	286	385	570	"	"
Winch Panel Midships	1	37/.072	208	246	330	"	"
Winch Panel For'd	1	37/.103	312	385	480	"	"
Ventilation Panel	2	37/.072	420	492	192	"	"
Refrigeration Panel	2	37/.103	482	770	324	"	"
Engine Room Panel E.R.1	2	37/.103	750	770	108	"	"
Engine Room Panel E.R.2	2	37/.103	764	770	86	"	"
Engine Room Panel E.R.3	2	37/.093	650	700	324	"	"
Service Lighting Panel	1	37/.072	194.56	246	120	"	"
Emergency Switchboard	1	61/.093	417	464	276	"	"

LIGHTING AND HEATING, ETC., CABLES.

WIRELESS	1	19/.083	30	118	180	V.I.R.	Lead Covered & Braided.
NAVIGATION LIGHTS C.O.S. to Indicator.	1	3/.029	1.56	5	10	"	"
LIGHTING AND HEATING							
Nav. Indicator to For'd Steaming	1	3/.036	0.26	10	568	V.I.R.H.R.	
" " " Bow Lights	1	3/.029	0.26	5	120	V.I.R.	Lead Covered & Braided.
" " " Aft Steaming	1	3/.036	0.26	10	866	V.I.R.H.R.	
" " " Stern Light	1	3/.036	0.26	10	810	V.I.R.H.R.	
Lighting Panel to C. J.1	1	37/.072	115.56	152	30	V.I.R.H.R.	
" " " C. J.2	1	37/.072	79	152	408	V.I.R.H.R.	
" " " L. J.1	1	37/.072	99.2	152	60	V.I.R.H.R.	
" " " L. J.2	1	37/.072	104	152	378	V.I.R.H.R.	
" " " L. J.3	1	37/.072	117.2	152	30	V.I.R.H.R.	
Engine Room Panel E.R.3 to E.R.2. S.1(C.R.Ltg.)	1	19/.052	81.66	104	36	V.C.	Lead covered.

MOTOR CABLES.

ALL IMPORTANT MOTORS TO BE ENUMERATED.	No.	B.H.P.						
Manoeuvring Air Compressor	2	87	1	37/.093	330	464	236	V.C. Lead covered.
Fresh Water Circ. Pump	3	35/40	1	19/.083	153	191	168	" " "
Sea Water Circ. Pump	2	25/35	1	19/.064	134	135	168	" " "
Ballast Pump	1	35/40	1	19/.083	152.5	191	180	" " "
Fire & Bilge Pumps	2	16/22	1	19/.052	84.8	104	132	" " "
Engine Turning	2	16	1	19/.052	62.3	104	108	" " "
Oil Fuel Transfer	1	14/18	1	19/.052	79.4	104	144	" " "
Lub. Oil Pumps	3	11/14	1	19/.052	58.3	104	96	" " "
Eng. Rm. Vent. Fans	2	10 1/2	1	7/.064	41	46	180	V.I.R. " "
Generator Cooling Pump	1	9	1	7/.064	38.2	46	48	" " "
Fuel Valve Cooling Pump	2	3	1	7/.029	12.5	15	60	" " "
Fuel Oil Purifier	2	3	1	7/.029	13.1	15	72	" " "
Lub. Oil Purifier	2	2	1	3/.036	8.8	10	60	" " "
Fuel Oil Priming Pump	2	1 1/2	1	3/.036	6.65	10	84	" " "
C.O.p. Compressors	2	52	1	37/.072	200	246	72	V.C. " "
Sea Water Circulating	1	3 1/2	1	7/.029	15.2	15	48	V.I.R. " "
Brine Pumps Refrig.	3	5	1	7/.029	15	15	84	" " "
Heat Rm Fans Cargo	2	2	1	3/.036	9	10	84	" " "
" " " "	1	1	1	3/.036	5.1	10	84	" " "
Handling Rm Fan Refrig.	1	0.5	1	3/.036	2	10	150	" " "
Sprinkler Pump	1	56	1	37/.072	215	246	204	V.C. " "
Air Compressor (Sprinkler system)	1	2	1	3/.036	8.7	10	168	V.I.R. " "
Emergency Bilge Pump	1	15/20	1	19/.064	79	135	528	V.C. " "
Windlass	1	59	1	37/.083	225	247	168	V.I.R. H.R.
Warping Winch	1	38	1	37/.072	153	152	240	V.I.R. H.R.
Steering Motors	2	40	1	37/.093	313.2	350	630	V.C. Lead Covered.
Sewage Plant	4	6	1	7/.036	24.5	24	36	V.I.R. " "

A Cable and load for supply to 2 motors from Main Switchboard.

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.

- 6 OCT 1947

*J. F. Bass*  
 Electrical Engineers. Date  
 For VICKERS-ARMSTRONGS LIMITED

**COMPASSES.**

Minimum distance between electric generators or motors and standard compass 125 ft.

Minimum distance between electric generators or motors and steering compass 120 ft.

The nearest cables to the compasses are as follows:—

A cable carrying 2 Ampères 6 feet from standard compass 4 feet from steering compass.

A cable carrying 0.10 Ampères in feet from standard compass 4 feet from steering compass.

A cable carrying 0.10 Ampères 6 feet from standard compass in 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 0° degrees on all course in the case of the standard compass, and 0° degrees on all course in the case of the steering compass.

FOR VICKERS-ARMSTRONGS LIMITED,  
*J. F. Bass*  
 Builder's Signature. Date 6<sup>th</sup> Oct 1947  
 COMMERCIAL MANAGER,  
 BARROW WORKS.

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 21st February, 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 on board under special survey in accordance with the approved plans and the Society's Rules for Electrical Equipment.

The installation has been examined and tested under full working conditions and found satisfactory. A satisfactory insulation test has been carried out.

The materials and workmanship are good.

*Noted*  
*[Signature]*  
 23.10.47

Total Capacity of Generators 1150 Kilowatts.

The amount of Fee £ 88 : 15 :  
 Lon 1/5  
 Liv 2/5  
 Bw 2/5  
 Travelling Expenses (if any) £ 16 : 17 :  
 Lon £ 13 6 3.16.3  
 Liv £ 16 17  
 Bw £ 2 14 6

When applied for, .....19.....  
 When received, .....19.....

*L. R. Home*  
 Surveyor to Lloyd's Register of Shipping.

Committee's Minute

Assigned *Su F.E. maly-rpt*

OCT 31 1947

5th. 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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