

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Date of writing Report 30 June 1947 When handed in at Local Office 19 Port of Copenhagen

No. in Survey held at Malborg Date, First Survey 7 January Last Survey 27 June 1947
Reg. Book. 85648 on the Single Screw Motor Vessel AFRICAN REEFER Tons 1862.14
Gross 1862.14
Net 968.29

Built at Elsinore By whom built Skibbyggeri Yard No. 230 When built 1935

Owners Rederiet Ocean Port belonging to Copenhagen

Electrical Installation fitted by Skibbyggeri Contract No. 1935 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. Yes

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

Heating 220 Power 220 Direct or Alternating Current, Lighting Direct Power Direct 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 Yes Generators, are they compound wound Yes are they level compounded under working conditions Yes
if not compound wound state distance between generators 3 ft 120 kW and from switchboard Yes 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 2 ft 120 kW in star side of engine room, fore and aft of each other
1 ft 60 kW in star side of engine room, fore and aft of each other
1 ft 60 kW in star side of engine room, fore and aft of each other
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 No combustible material and vertically Yes 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 At the forward end of the engine room
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 No combustible material and vertically Yes what insulation
material is used for the panels Marble 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 Yes 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 For each 120 kW Generator
A three pole circuit breaker with overload and reverse current trips
For 60 kW Generator: A double pole circuit breaker with overload trips and a double
and for each outgoing circuit: A double pole switch and a fuse in each pole.

Are compartments containing switchboards composed of fire-resisting material or lined as per Rule Yes Instruments on main switchboard 4
ammeters 4 voltmeters 1 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 One set of earth lamps

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 700 amp 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 70 amp 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 4 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

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. *No*, if so, are they adequately protected. Are cables in machinery spaces, galleys, laundries, etc., lead covered. *yes* or run in conduit. *yes*. State how the cables are supported and protected. *The cables are supported by screwed clips, lead covered and steel wire armoured cables used.*

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. *yes* and method of control. *yes*.

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. *yes*.

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. *yes*.

and where are the controlling switches fitted. *yes*, are all fittings suitably ventilated. *yes*, are all fittings and accessories constructed and installed as per Rule. *yes*. Searchlight Lamps, No. of *1*, whether fixed or portable. *portable*, are their fittings as per Rule. *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. *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. *No unprotected combustible material*. 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. *yes*. 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. *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 the cartridge type. *yes* are they of an approved type. *yes*. 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*. 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	3x120	220	545	400	344/180HP 230V 3-Phase running on heavy oil at about 160°F		
	1	60	220	275	1650	1" 45 - 45CSP - - - -		
EMERGENCY								
ROTARY TRANSFORMER								

GENERATOR CABLES.

DESCRIPTION.	KILOWATTS.	CONDUCTORS.		MAXIMUM CURRENT IN AMPERES.		APPROX. LENGTH (lead plus return) in 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	120	2	240	545	548	26-28 30	Vulcan	Lead covered and
" " EQUALISER		1	240		274	12 14	India	Steel wire armoured
	60	2	150	275	404	28	rubber	"
EMERGENCY GENERATOR								
ROTARY TRANSFORMER: MOTOR								
" " GENERATOR								

MAIN DISTRIBUTION CABLES.

DESCRIPTION.	CONDUCTORS.		MAXIMUM CURRENT IN AMPERES.		APPROX. LENGTH (lead plus return) in 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							
Fans for condors	1	95 + 50	185	248	60	Vulcan	Lead covered and
Steam extinguisher, Ventilator accommodation	1	150	200	202	40	India	Steel wire armoured
Header, 1st mach. provision	1	95	130	150	76	rubber	"
Windlass, Winches, Ventilators for Holders	1	95	107	150	86	"	"
Winches, Ventilators for Holders aft	1	25	35	63	40	"	"
Heater accommodation aft	1	95	145	150	40	"	"
Light accommodation	1	70	125	124	36	"	"
Galley	1	6	26	29	10	"	"
Salt water cooling pumps	1	25	65	63	30	"	"
Lubricating oil purifiers and heaters	1	25	65	63	32	"	"
Fuel oil purifiers and heaters	1	35	78	78	24	"	"
Hydrophor pumps and water heater							

LIGHTING AND HEATING, ETC., CABLES.

WIRELESS	1	4	20	21	50	"	"
NAVIGATION LIGHTS	1	25	1	13	52	"	"
LIGHTING AND HEATING							
Light forward	1	25	12	13	84	"	"
• aft	1	4	12	21	84	"	"
• accommodation aft	1	25	12	13	112	"	"
• Bridge	1	25	10	13	25	"	"
• Boat deck	1	40	32	21	20	"	"
Heater accommodation	1	150	120	202	40	"	"

MOTOR CABLES.

ALL IMPORTANT MOTORS TO BE ENUMERATED.	No.	B.H.P.						
NH's compressors	2	80	1	240	290	275	64-64	"
Cooling water pumps for NH's plant	2 1/2	5/3	1	6 1/2	21/3	29 1/2	50-30	"
Air circulating fan, 1st Deck	1	7.5	1	16	30	48	96	"
" " Hold I	1	5.5	1	6	23	27	92	"
" " Hold II	1	12	1	25	48	63	86	"
" " aft 1st Deck	2	4	1	4	16	21	70	"
" " aft Hold	1	12	2	10	48	76	80	"
Steering engine	1	11.5	2	25	46	63	136	"
Windlass	1	30	1	50	114	102	68	"
Winches	9	16	1	25	63	65	24-56	"
Ventilators for Holders	5	0.65	1	1.5	30	66	20-30	"
Salt water cooling pumps	1	30	1	70	114	124	18	"
Fresh water cooling pumps	2	6.5	1	10	26	38	22-24	"
Lubricating oil pumps	2	20	1	35	77	78	14-16	"
Engine turning gear	1	8	1	10	32	38	40	"
Bilge and sanitary pumps	1	30	1	95	114	150	12	"
Ballast pump	1	10	1	16	40	48	32	"
Oil fuel transfer pump	1	8	1	10	32	38	16	"
Gyro compass		34W	1	6	14	27	48	"
Drilling machine - turning lathe	2	1.5	1	1.5	7	7	20	"
Salt water cooling pumps, deep metal	3		1	2.5	13	13	8	"
Lubricating - fuel oil purifiers	2	2.5	1	2.5	11	13	8-6	"
" " " " heaters	2	44W	1	4	18	21	8-6	"
" " " " " "	2	8	1	10	36	38	8-6	"
Hydrophor pumps	2	3-2.5	1	2.5	13-11	13	6-8	"
" " " "	1	1.6	1	1.5	7	66	10	"
Water heater	1	10.84W	1	16	49	48	6	"
Ref. generating mach. provision	2	1-2	1	2.5	4-8	13	40-32	"
Ventilators engine room	2	4.5	1	4	18	21	12-8	"
" " accommodation	1	4	1	4	17	21	10	"
" " NH's comp. room	1	0.65	1	1.5	3	66	20	"

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Lloyd's Register Foundation

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.

AALBORG VÆRFT A/S

Electrical Engineers.

Date 23-6-47

COMPASSES.

Minimum distance between electric ~~generators or~~ motors and standard compass 7.4

Minimum distance between electric ~~generators or~~ motors and steering compass 6.4

The nearest cables to the compasses are as follows:—

A cable carrying 6 Ampères 2 feet from standard compass 2.5 feet from steering compass.

A cable carrying 0.5 Ampères 1.5 feet from standard compass 3.0 feet from steering compass.

A cable carrying 0.25 Ampères to light in feet from standard compass and 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.

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 *yes* If not, state date of approval *✓*

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

General Remarks (State quality of workmanship, whether insulation tests, etc., have been made, opinions as to class, etc.)

The electric installation was originally constructed by Messrs Helsingørsk Jærskib- og Maskinbyggeri, Copenhagen, under Special Survey by Germanischer Lloyd.
Extensions and amendments have now been carried out by Messrs Aalborg Værft A/S of Aalborg in accordance with the plans approved by the Secretary's letter E dated 21.3.1947 and under Special Survey by Surveyors to this Society.
The whole installation has been overhauled, megger tested, and tested under working conditions and found satisfactory.

Total Capacity of Generators 420 Kilowatts.

The amount of Fee ... £ 550.-

When applied for, 4/7 1947

Travelling Expenses (if any) £ :

When received.

19....

Surveyor to Lloyd's Register of Shipping.

Committee's Minute 8 AUG 1947

Assigned

See F.E. mch. rpt.