

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

Received at London Office

11 FEB 1951

Date of writing Report 6/2 19.52 • When handed in at Local Office 8/2 19.52 • Port of M.A.L.M.Ö

No. in Survey held at M.A.L.M.Ö Date, First Survey 30/11 Last Survey 28/1 19.52.
Reg. Book. (No. of Visits 14)HL. 8. 35993s. on the M/T "H.A.V.F.R.U." Tons { Gross 10.491
Net 6.165

Built at M.A.L.M.Ö By whom built Kockums Mek. Verkst. A/B Yard No. 319 When built 1952

Owners A/S Havtor Port belonging to O.S.I.O

Installation fitted by Kockums Mek. Verkstads A.-B. When fitted 1952

Is vessel equipped for carrying Petroleum in bulk Yes Is vessel equipped with D.F. Yes E.S.D. Yes Gy.C. Yes Sub.Sig. - Radar Yes

Plans, have they been submitted and approved Yes System of Distribution Two wire Voltage of Lighting 110

Heating 220 Power 220 D.C. or A.C., Lighting D.C. Power D.C. If A.C. state frequency -

Prime Movers, has the governing been found as per Rule when full load is thrown on and off Yes Are turbine emergency governors fitted with a trip switch - Generators, are they compound wound Yes, and level compounded under working conditions Yes,

if not compound wound state distance between generators - and from switchboard - Are the generators arranged to run in parallel Yes, are shunt field regulators provided Yes.

Is the compound winding connected to the negative or positive pole Negative pole 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

Position of Generators One on port and one on stbd. side in engine room.

is the ventilation in way of generators satisfactory Yes are they clear of inflammable material and protected from mechanical injury and

damage from water, steam and oil Yes Switchboards, where are main switchboards placed On platform deck, port side in engine room.

are they in accessible positions, free from inflammable gases and acid fumes and protected from mechanical injury and damage from water, steam and oil Yes, what insulation is used for the panels Dead front switchboard, if of synthetic insulating

material is it an Approved Type - if of semi-insulating material (slate or marble) are all conducting parts insulated therefrom as

per Rule - Is the construction as per Rule, including locking of screws and nuts. Yes Description of Main Switchgear

for each generator and arrangement of equaliser switches. 3 - pole C.B. with o/c in two poles U/V trips and o/c perf. relay. Third pile used for equaliser.

and the switch and fuse gear (or circuit breakers) for each outgoing circuit D.P. knife and rotary switch and

D.P. fuse.

Are compartments containing switchboards composed of fire-resisting material or lined as per Rule Yes Instruments on main switchboard 8

ammeters 6 voltmeters - synchronising devices. For compound machines in parallel are the ammeters and reversed current

protection devices connected on the pole opposite to the equaliser connection Yes Earth Testing, state means provided

Ohm meters

Switches, Circuit Breakers and Fuses, are they as per Rule Yes, are the fuses an Approved Type Yes

make of fuses Asea & L.K., are all fuses labelled Yes If circuit breakers are provided for the generators, at what

overload do they operate Operated at 10% set at 50%, and at what current do the reversed current protective devices operate 15% R/C

Joint Boxes, Section Boards and Distribution Boards, is the construction as per Rule Yes

Cables, are they insulated and protected as per Rule 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 < 6% are the ends of all cables having a sectional

area of 0.01 square inch and above provided with soldering sockets Yes Are all paper insulated and varnished cambric insulated

cables sealed at the ends - 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 any 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 -

or of the "HR" type State how the cables are supported or protected L.C. & S.T.A. cables clipped to

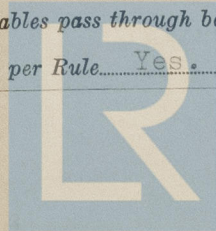
surface plate or tray in machinery spaces and on decks and covered with steel channel

plates in E.R. L.C. cables clipped to surface and to wood grounds in accommodations.

Are all lead sheaths, armouring and conduits effectually bonded and earthed 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 Refrigerated chambers, are the cables and fittings as per Rule Yes.

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005194-005209-0235 1/2

Insulation Tests. has the insulation resistance of all circuits and apparatus been tested and found satisfactory. Yes

| DESCRIPTION OF GENERATOR. | No. of | MAKER. | RATED AT | | | | PRIME MOVER. | |
|--|--------|--------|-----------------------------|--------|----------|-------------------|--------------|----------------------|
| | | | Kilowatts per Generator. | Volts. | Ampères. | Revs. per Min. | TYPE. | MAKER. |
| MAIN | 2 | Asea | 150 | 230 | 652 | 350 | Heavy oil | eng. Kockums M.V.A/B |
| Harbour 230V | 1 | G.E.C. | 40 | 230 | 174 | 525 | Steam eng. | W. Sisson & Co. Ltd. |
| " 115V | 1 | G.E.C. | 40 | 115 | 348 | 525 | " " | " |
| EMERGENCY ... ROTARY TRANSFORMER | 1 | Thrige | 30 | 110 | 273 | 1400 | El. motor | Thomas B. Thrige |

| DESCRIPTION. | KILOWATTS. | CONDUCTORS. | | MAXIMUM CURRENT IN AMPERES. | | APPROX. LENGTH (lead plus return) (feet). | INSULATION. | PROTECTIVE COVERING. |
|----------------------------|------------|---------------------------|---|-----------------------------|-------|---|-------------|----------------------|
| | | No. in Parallel Per Pole. | Sectional Area or No. and Dia. of Strands. Sq. ins. or sq. mm. | In the Circuit. | Rule. | | | |
| MAIN GENERATOR | | 3 | 185 | 652 ✓ | 3x232 | Max. 61 | Rubber | L.C. & S.T.A. |
| " " EQUALISER | | 6 | 185 | — | 6x232 | " 61 | " | " " |
| Harbour " 230V | 40 | 1 | 120 | 174 ✓ | 174 | 15 | " | " " |
| " " 115V | 40 | 2 | 120 | 348 ✓ | 2x174 | 17 | " | " " |
| EMERGENCY GENERATOR | | | | | | | | |
| ROTARY TRANSFORMER: MOTOR | 46 HP | 1 | 150 | 170 ✓ | 203 | 24 | " | " " |
| " " GENERATOR... | 30 | 1 | 240 | 273 ✓ | 273 | 18 | " | " " |

[illegible]

| ALL IMPORTANT MOTORS TO BE ENUMERATED. | | | No. | B.H.P. | | | | | | | | | |
|---|----------|------|-----|--------|------|-----|---------|--------|---------------|---|--|--|--|
| Cool.pumps salt W. | 2 | 35 | 1 | 120 | 134 | 174 | Max.68 | Rubber | L.C. & S.T.A. | | | | |
| Cool.pumps fresh W. | 1 | 27 | 1 | 70 | 102 | 125 | 68 | " | " | " | | | |
| Lubr.oil pumps | 2 | 46 | 1 | 150 | 173 | 203 | Max.80 | " | " | " | | | |
| Cool.w.pump (aux.oil eng) | 1 | 5 | 1 | 10 | 19.5 | 38 | 61 | " | " | " | | | |
| Bilge pump | 1 | 8 | 1 | 10 | 32 | 38 | 42 | " | " | " | | | |
| Fire pump | 1 | 21 | 1 | 50 | 79 | 98 | 22 | " | " | " | | | |
| Turning gear | 1 | 14 | 1 | 25 | 54 | 63 | 62 | " | " | " | | | |
| Steering gear | 2 | 24.5 | 1 | 50 | 93 | 98 | Max.114 | " | " | " | | | |
| Eng.vent fans | 2 | 4.6 | 1 | 4 | 17.9 | 22 | " 104 | " | " | " | | | |
| Fuel oil sep. | Off 2 | 3.75 | 1 | 4 | 14.6 | 22 | " 22 | " | " | " | | | |
| " " transf.pump | C1 1 | 5 | 1 | 6 | 20 | 28 | 20 | " | " | " | | | |
| " " sep.pump | 2 | 9.9 | 1 | 1.5 | 39 | 8 | Max.17 | " | " | " | | | |
| Domestic compr. | 1 | 5 | 1 | 6 | 19 | 28 | 22 | " | " | " | | | |
| Cool pump for refr. | 1 | 1 | 1 | 1.5 | 45 | 8 | 18 | " | " | " | | | |
| Lubr.oil sep. | Off C2 2 | 3.2 | 1 | 4 | 12.9 | 22 | Max.44 | " | " | " | | | |
| Circ.pump exhaust gas econ | 1 | 0.8 | 1 | 1.5 | 36 | 8 | 16 | " | " | " | | | |
| Cool pumps nozzles | 2 | 1 | 1 | 1.5 | 43 | 8 | 54 | " | " | " | | | |
| Hydrophor pumps | 2 | 2 | 1 | 1.5 | 82 | 8 | Max.30 | " | " | " | | | |
| Lathe | 1 | 3 | 1 | 6 | 122 | 28 | 16 | " | " | " | | | |
| Shaping machine | 1 | 2.7 | 1 | 2.5 | 11.3 | 15 | 20 | " | " | " | | | |
| Drilling " | Off C5 1 | 2 | 1 | 2.5 | 88 | 15 | 18 | " | " | " | | | |
| Grinding " | 1 | 1.5 | 1 | 2.5 | 64 | 15 | 18 | " | " | " | | | |
| Traverse crane | Off C7 1 | 6.5 | 1 | 10 | 27 | 38 | 14 | " | " | " | | | |

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.

KOCKUMS
MEKANISKA VERKSTÄDS AKTIEBOLAG
ELECTRIC ENGINEERS

Yngve Franzen

Electrical Contractors.

Date 7.2.1952

COMPASSES.

Have the compasses been adjusted under working conditions. Yes.

KOCKUMS
MEKANISKA VERKSTÄDS AKTIEBOLAG

Knut Hildebrand

Builder's Signature.

Date

Have the foregoing descriptions and schedules been verified and found correct. Yes.

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.

Certificates. Are certificates of test for motors engaged on essential sea 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 above described electrical equipment installation has been fitted onboard in accordance with the Rules, approved plans and instructions and has been tested with satisfactory results.

The workmanship and material are good.

This electric equipment installation is, in my opinion, suitable for a classed vessel.

Noted ADM 28.2.52

Total Capacity of Generators 340 Kilowatts.

The amount of Fee ... Mmo. Kr. 1.344: When applied for,
Skm. Kr. 336: 8/2 1952.
Skm. When received,
Travelling Expenses (if any) Kr. : 35:50 19

A. Barring

Surveyor to Lloyd's Register of Shipping.

Committee's Minute

FRI. 29 FEB 1952

Assigned

Su F.E. mch. not



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