

REPORT ON ELECTRIC PROPELLING MACHINERY

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Date of writing Report 23.11. 1959 When handed in at Local Office 19 Port of H A M B U R G

No. in Survey held at H a m b u r g Date, First Survey 23. 9. 19 58 Last Survey 19. 3. 19 59

eg. Book No. of Visits 8

Single }
on Twin } Screw vessel
Triple }
Quadruple }

" M O S C O W " (M O S K V A)

Gross
Net

uilt at Helsingfors By whom built Wärtsilä-koncernen A/B Sandvikens Skeppsdocka Yard No. 365 When built

Electrical Machines made at Hamburg By whom made Siemens-Schuckertwerke Generator Nos. When made Motor Nos.

Shaft Horse Power at Full Power Total Capacity of Generators kilowatts

Machinery Numeral as per Rule Owners Port belonging to

Trade for which Vessel is intended Ice Breaker.

ANS.—Have plans of the Machines, Control Gear, Cables and Circuits been submitted and approved yes

TEAM ENGINES.—Type of Engine No. of Engines R.P.M. Is a Governor fitted Is the speed variation as per Rule when load is thrown off Is an Emergency Governor fitted Is it arranged for hand tripping Does it trip the throttle valve If exhaust steam is admitted, is an automatic shut-off fitted Is provision made for bleed steam and is a non-return or positive shut-off valve fitted Lubricating Oil.—State means provided for emergency supply Is the emergency supply sufficient to maintain lubrication as per Rule Mechanical Balance.—Are the Engines and Generators balanced so as not to cause appreciable vibration

TE ENGINES.—Type of Engines R.P.M. Is a Governor fitted Is the speed variation as per Rule when load is thrown off Is an Emergency Governor fitted Does it operate as per Rule

GENERATORS.—Direct or Alternating Current No. of Generators If A.C. state frequency at full load Kw. per Generator Volts per Generator Amps. per Generator Have certificates of works tests been supplied and the results found as per Rule Ventilation.—State how arranged (open or closed system) Heating when Idle.—What provision is made Facilities for Inspection and Repair.—Are these as per Rule Are wear-down gauges supplied Bilges.—Are the arrangements to prevent accumulation of bilge-water under the machines satisfactory

MOTORS.—S.H.P. per Motor at full power No. of Motors Single or double unit Volts per Motor Amps. per Motor Have certificates of works tests been supplied and the results found as per Rule A.C. Motors.—Is provision made for machining the slip rings Do the Motors remain in synchronism under all normal conditions of running D.C. Motors.—If the system permits overspeeding at light loads are overspeed protection devices fitted

EXCITATION.—Is power for excitation taken from the ship's Auxiliary Generators If so, state voltage and excitation amperes at full power kilowatts for excitation State excitation arrangements for Propulsion Generators 5 - Motor/Generator Sets. One for each propulsion circuit (3) and one standby for port and starbd. circuits and one standby for middle propulsion circuit and Propelling Motors see generators Is an alternative means of excitation provided yes Have certificates of works tests been supplied and found as per Rule

CONTROL.—Position of Main Control Panel Does it comply with the requirements regarding position, grouping of controls yes, instruments yes, insulating materials (state type used) dead front construction, spacing and shielding of live parts yes, accessibility yes, position of fuses yes, locking of screws and nuts yes, labelling yes, fuses for voltmeters, pilot lamps, etc. yes, provision for manual operation of contactors, etc. (state method employed) Air operated circuit breakers which can also be operated with hand wheels. Selection of propulsion machines through hand operated change-over knife type switches. earthing of instrument cases Bakelite, provision of renewable tips on switches subject to arcing yes, capability of withstanding shock and inclination yes, operation with high and low voltage yes, rustproofing of parts. Overload and Short Circuit Protection.—State means provided

See remarks 1

At what load is it set to operate to be tested and Has it been tripped by hand when running at full power and found satisfactory set on board.

Are fuses of an approved type yes

Earth Detection.—Is the main circuit provided with means for detecting earths yes Are aural and visual alarms fitted yes Is main power interrupted by an earth fault no If a limiting resistance is in the earth detecting circuit what is the ohmic value see remarks 2 What earth leakage current is necessary to operate the device to be tested and set on board Are the excitation circuits provided with means for earth detection yes Mechanical Protection.—Are circuits above 250 volts D.C. or 150 volts A.C. to earth protected as per Rule yes

Bridge or Deck Control.—Is bridge control provided yes If so, from how many stations can it be operated freely without producing currents or loads in excess of the working capacity of the plant and without reference to electrical instruments Is an emergency control provided in the engine room switchboard yes and can the transfer to this control be made quickly in the engine room switchboard yes Can the emergency control be rendered mechanically independent of the deck control yes Instruments and Gauges.—State Instruments provided for each Generator Ammeter, voltmeter and tachometer.

and for each Motor Power instruments and ammeter (E.R. control pulpit) Is an Insulation Tester provided Discharge Protection.—Are all shunt field circuits protected as per Rule yes D.C. Systems.—If the Generators are connected in series state means provided to prevent reversal of direction of rotation of the Prime Movers Field circuits disconnected through relays operated by generator tachometer contacts. Two settings provided 1) 240 rpm/120secs. time lag. 2) 200 rpm instantaneous. Are the Propulsion Generators also used alternatively for other purposes If so, is provision made for overload protection, voltage adjustment, etc.

Reversing Switches.—If any are provided are they interlocked as per Rule.....yes..... Resistances.—Are resistances for synchronous motor fields insulated per Rule..... Temperature Alarm.—Are machines with enclosed ventilating system, etc., fitted with temperature alarm.....

CONDUCTORS & CABLES.—Are all essential Conductors stranded as per Rule..... Are the ends of Paper and Varnished Cambric Insulated (sealed)..... Are all Cables carrying A.C. constructed and installed as per Rule..... Have all Main Cables been tested by the Surveyors at the works.....

SECONDARY BATTERIES.—Are Batteries used for starting Main Propulsion Engines..... If so, have full particulars of rating been submitted and approved..... Have they been tested under working conditions and do they give the required number of starts..... Are they installed as per Rule..... Are the charging arrangements satisfactory.....

SPARE GEAR.—If engaged on open sea service has a list of spare gear been submitted and approved..... Is a list of the articles supplied attached to this report..... Are they stored as per Rule.....

ELECTRIC PROPULSION EQUIPMENT CONDUCTORS

DESCRIPTION	CONDUCTORS		MAXIMUM CURRENT—AMPERES*		MAXIMUM VOLTAGE	INSULATED WITH	PROTECTIVE COVER
	No. in parallel per Pole	Sectional Area sq. in. or sq. mm.	In Circuit When Running	When Manœuvring			
MAIN GENERATORS							
GENERATOR FIELDS							
MAIN MOTORS							
MOTOR FIELDS							
CONTROL CIRCUITS							
OTHER CIRCUITS:—							

*For field circuits the "Hot" and "Cold" value should be given.

SIEMENS-SCHUCKERTWERKE
The foregoing is a correct description of the machinery.
W. Morris Electrical Engineers. Date 26. Nov. 1959

COMPASSES.—Are Single-Conductor circuits carrying direct current arranged with lead and return Conductors fitted as close to one another as possible..... Have the Compasses been adjusted under working conditions.....

Builders' Signature..... Date.....

Is this machinery duplicate of a previous case..... If so, state name of vessel.....

GENERAL REMARKS.—~~xxxxxx~~

1) Overload and Short Circuit Protection ✓
Circuit Protection:—3 relays in series, are provided for each circuit.
a) Alarm at 120 % F.L. amps. ✓
b) Overcurrent protection at 150 % F.L. amps/9 mins. time delay. ✓
c) Instantaneous short circuit protection at 3 x overcurrent setting. ✓
(b) and (c) trip generators excitation supply contactor. ✓
Generator Protection
Short circuit protection relay provided for each generator which operates at 3 x overcurrent setting/0.75 secs. time delay. Relay trips generator excitation contactor, which in turn trips generator circuit breaker.

2) Earth Detection Systems—
1. Main Propulsion Circuits (3):—Each circuit (3) provided with earth indicating control equipment injected with 220 volts A.C. Gives alarm and indication in Engine Room and indication only at all bridge control stations. Earth control circuit fitted with 2 - 2000 ohm resistances in series with one another and in parallel to earth connection. 10 microfarad condenser in series with 220 volts A.C. supply also fitted.
2. Propulsion Excitation Circuits:—One ohmmeter with selector switch.
3. Exciters Excitation Circuits:—Earth lamps. ✓
Total capacity of generators for propulsion purposes..... kilowatts.

The amount of Fee See Rpt. 10
Travelling Expenses (if any) £ 59/305 A-D

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

W. Morris
Surveyor to Lloyd's Register of Shipping