

## REPORT ON ELECTRIC PROPELLING MACHINERY.

Received at London Office.

Date of writing Report 18-3-1957 When handed in at Local Office 25-3-1957 Port of GLASGOW  
 No. in Survey held at GLASGOW Date, First Survey 4-12-56 19 Last Survey 27-2-1957  
 Reg. Book. No. of Visits 9  
91096 ~~Single~~ Paddle ~~on Twin~~ on Paddle vessel H. M. TUG "DEXTEROUS" Tons Gross 473  
~~Triple~~  
~~Quadruple~~  
 Built at GLASGOW By whom built YARROW & CO. LTD. Yard No. 2089 When built 1957  
R. 67892  
 Electrical Machines made at RUGBY By whom made BRITISH THOMSON-HOUSTON CO. LTD. Generator Nos. 3, 4, 5 When made 195  
R. 66636 & 7  
 Motor Nos. R. 66636 & 7  
 Shaft Horse Power at Full Power 1600 AT PADDLES (800 PER PADDLE) Total Capacity of Generators 1356 kilowatts  
 Machinery Numeral as per Rule 396 Owners ADMIRALTY Port belonging to —  
 Trade for which Vessel is intended FOR TOWING & SALVAGE SERVICE

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

STEAM 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 bled steam — and is a non-return or positive shut-off valve fitted — Lubricating Oil.— State means provided for emergency supply —  
 Is the emergency reserve sufficient to maintain lubrication as per Rule — Mechanical Balance.— Are the Engines and Generators balanced so as not to cause appreciable vibration —

OIL ENGINES.— Type of Engines DAVEY PAXMAN TYPE 12YHAXM R.P.M. 1000 Is a Governor fitted Yes Is the speed variation as per Rule when load is thrown off Yes Is an Emergency Governor fitted Yes Does it operate as per Rule Yes

GENERATORS.— Direct or Alternating Current D.C. No. of Generators 4 If A.C. state frequency at full load —  
 Kw. per Generator 339 Volts per Generator 305 Amps. per Generator 1110 Have certificates of works tests been supplied Yes and the results found as per Rule Yes Ventilation.— State how arranged (open or closed system) Self ventilated  
drift proof enclosure Are ventilating arrangements satisfactory Yes Heating when Idle.— What provision is made 4-200 watt heaters  
in each generator Facilities for Inspection and Repair.— Are these as per Rule Yes  
 Are wear-down gauges supplied Yes Bilges.— Are the arrangements to prevent accumulation of bilge-water under the machines satisfactory Yes

MOTORS.— S.H.P. per Motor at full power 820 No. of Motors Two Single or double unit Single Volts per Motor 600  
 Amps. per Motor 1110 Have certificates of works tests been supplied Yes and the results found as per Rule Yes 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 Yes

EXCITATION.— Is power for excitation taken from the ship's Auxiliary Generators Yes If so, state voltage 220 and excitation amperes at full power 85.5 kilowatts for excitation 18.8 State excitation arrangements for Propulsion Generators Shunt fields excited by one, three field winding excitor which maintains constant loop current  
 and Propelling Motors Each separately excited by 2 winding exciters an alternative means of excitation provided Yes, standby excitor set  
 Have certificates of works tests been supplied Yes and found as per Rule Yes

CONTROL.— Position of Main Control Panel At Forward bulkhead of motor room & at the sternships  
 Does it comply with the requirements regarding position Yes, grouping of controls Yes, instruments Yes, insulating materials (state type used) ittings mounted on Sindanga Panels, 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 contractors, etc. (state method employed) Control is carried out by potentiometers controlling excitor fields, and reversing switches which are chain and gear driven from central handwheel on control panel in engine room  
 earthing of instrument cases above 250 volts to earth Yes, provision of renewable tips on switches subject to arcing Yes, capability of withstanding shock and inclination Yes, operation with high and low voltage Yes, rust proofing of parts — Overload and Short Circuit Protection.— State means provided Generator excitation excess voltage relay operates alarm lamp; excess loop current relay removes motor and generator excitations

At what load is it set to operate 150 Volts/2220 amp Has it been tripped by hand when running at full power and found satisfactory Relays tried but not at full power  
 Are fuses of an approved type Admiralty Pattern

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 10 ohms What earth leakage current is necessary to operate the device 5 amps If a switch is used to disconnect the aural signal does it automatically give visual indication Yes Are the excitation circuits provided with means for earth detection Yes Mechanical Protection.— Are circuits above 250 volts to earth protected as per Rule Yes

Bridge or Deck Control.— Is bridge control provided Yes If so, from how many stations Two can it be operated freely without producing currents or loads in excess of the working capacity of the plant Yes and without reference to electrical instruments Yes Is an emergency control provided in the engine room Yes and can the transfer to this control be made quickly in the engine room Yes Can the emergency control be rendered mechanically independent of the deck control Yes Instruments and Gauges.— State Instruments provided for each Generator RPM, Volts, one excitation  
ammeter for all fields, one main loop current ammeter

and for each Motor S.H.P. Paddle RPM, Volts (with changeover switch) Field Amps, 3rd Amp Is an Insulation Tester provided Yes  
Exhaust air duct Admiralty Supply

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 Each generator protected against failing prime mover by underspeed relay which trips out excitation and indication given by warning light on control panel  
 Are the Propulsion Generators also used alternatively for other purposes No 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 as per Rule. — Temperature Alarm.—Are machines with enclosed ventilating system, etc., fitted with temperature alarm. Visual lamp warning.

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

SECONDARY BATTERIES.—Are Batteries used for starting Main Propulsion Engines. No 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. Yes Is a list of the articles supplied attached to this report. — Are they stored as per Rule. Yes

*Spare to Admiralty Spec. DEE 462*

### ELECTRIC PROPULSION EQUIPMENT CONDUCTORS.

DESCRIPTION	CONDUCTORS.		TOTAL MAXIMUM CURRENT—AMPERES.*		Rule.	MAXIMUM VOLTAGE TO EARTH.	INSULATED WITH.	DI-ELECTRIC THICKNESS.	HOW PROTECTED.
	No. per Pole.	Nominal Area per Pole.	In Circuit.						
MAIN GENERATORS	2	0.75"	When Running.	When Manoeuvring.					
GENERATOR FIELDS	1	7/036	1110	1110	1188	600	VC Rubber	Rule Requirement	HRB
			14	14	24	150		"	
MAIN MOTORS	1	1.25"	1110	1110	1190	600	VC Rubber	"	LC
MOTOR FIELDS	1	7/044	17.9	17.9	31	220			HRB
CONTROL CIRCUITS	All control circuits 7/029 to Rule Requirements.								
OTHER CIRCUITS:—	For full details see approved Drg. No. 2088/9. 26/21 Sheet 1 & 2								

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

The foregoing is a correct description.  
**THE BRITISH THOMSON-HOUSTON CO. LTD.** */s/ J. Strand.* Electrical Engineers.

Date 20th March 1957.

COMPASSES.—Are Single-Conductor circuits carrying direct current arranged with lead and return Conductors fitted as close to one another as possible. Yes

Have tests been made during adjustment of the Compasses to determine the effect of switching the main circuits on and off. Yes

*/s/ J. Duthie* **YARROW & CO. LTD.,** Builders' Signature.

Date 22nd March 57.

Is this machinery duplicate of a previous case. Yes If so, state name of vessel H.M.T.G. "DIRECTOR"

General Remarks (State quality of workmanship, opinions as to class, &c.)

*The electrical propulsion equipment of this vessel has been fitted on board under Special Survey and in accordance with the approved plans, tested under full working conditions, and found satisfactory. The quality of materials and workmanship is good.*

The Surveyors are requested not to write on or below the space for Committee's Minute.

admiralty Spec. Fee £100 : — :  
 Birmingham 4/5th £ 80 : — :  
 Glasgow 1/5th £ 20 : — :  
 The amount of Entry Fee £ 107 : 16 :  
 Birmingham 4/5th £ 86 : 5 :  
 Glasgow 1/5th £ 21 : 11 :  
 Travelling Expenses (if any) £ 10 : 10 : 4

When applied for, 26 MAR 1957

When received, 19

*Fred B. Mott* for **H.G. FINDLAY & SELF**  
 Surveyor to Lloyd's Register of Shipping.

Date

Committee's Minute



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