Rpt. 4d.

No. 77102

REPORT ON ELECTRIC PROPELLING MACHINERY.

Received at London Office 1 AUG 1951

Date of writing Report 8th May 1951 When handed in at Local Office — 19 Port of GLASGOW

No. in Reg. Book. Survey held at Dumbarton Date, First Survey 6th Feb. 1951 Last Survey 24th April 1951 No. of Visits —

05754 ~~Single~~ on Twin ~~Triple~~ ~~Quadruple~~ Screw vessel "ROYAL IRIS" Tons Gross 1000 Net 550

Built at Dumbarton By whom built Wm. Denny & Bros. Ltd. Yard No. 1448 When built 1951

Electrical Machines made at Manchester By whom made Metropolitan-Vickers Electrical Co. Ltd. Generator Nos. See overleaf Motor Nos. See overleaf When made 1951

Shaft Horse Power at Full Power 1,460 Total Capacity of Generators 1,200 kilowatts

Machinery Numeral as per Rule 271 Owners Corporation of Wallasey Ferry Service Port belonging to Liverpool

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 Gas. Ass'a. Ruston Hornsby. R.P.M. 500 Is a Governor fitted Yes Is the speed variation as per Rule when load is thrown off Yes Is an Emergency Governor fitted — Does it operate as per Rule —

GENERATORS.— **Direct or Alternating Current** D.C. No. of Generators 4 If A.C., state frequency at full load —

Kw. per Generator 300 Volts per Generator 300 Amps. per Generator 1,000 Have certificates of works tests been supplied Yes and the results found as per Rule Yes **Ventilation.**—State how arranged (open or closed system) Open.

Are ventilating arrangements satisfactory Yes **Heating when Idle.**—What provision is made Electrical heaters fitted in all generators. **Facilities for Inspection and Repair.**—Are these as per Rule Yes

Are wear-down gauges supplied No **Bilges.**—Are the arrangements to prevent accumulation of bilge-water under the machines satisfactory Yes

MOTORS.— S.H.P. per Motor at full power 730 No. of Motors 2 Single or double unit Single Volts per Motor 600/450

Amps. per Motor 1,000 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 109 kilowatts for excitation 24 State excitation arrangements for Propulsion Generators "Metadyne" generator controls field. — and Propelling Motors "Metadyne" generator. Is an alternative means of excitation provided Standby duplicate generator. Have certificates of works tests been supplied Yes and found as per Rule Yes

CONTROL.— Position of Main Control Panel On special platform in Engine Room, forward

Does it comply with the requirements regarding position Yes, grouping of controls Yes, instruments Yes, insulating materials (state type used) Ceramic, 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) All main controls are manually operated.

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 Overcurrent Circuit Breaker, on opening, inserts bridging resistance in "loop", stops exciter set, kills generator exciter field, and operates alarm.

At what load is it set to operate 2,000 A. Has it been tripped by hand when running at full power and found satisfactory Yes.

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 0·5 ohm. What earth leakage current is necessary to operate the device 5 Amperes 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 Three 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 B.H.P. meter for each generator. Ammeter for "loop" current.

and for each Motor S.H.P meter & revolutions indicator Is an Insulation Tester provided Yes

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 is removed from generator by underspeed tripping relay.

Are the Propulsion Generators also used alternatively for other purposes No If so, is provision made for overload protection, voltage adjustment, etc. —

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Reversing Switches.—*If any are provided are they interlocked as per Rule* — **Resistances.**—*Are resistances for synchronous motor fields insulated as 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* 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* — *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.		TOTAL MAXIMUM CURRENT—AMPERES.*			MAXIMUM VOLTAGE TO EARTH.	INSULATED WITH.	DI-ELECTRIC THICKNESS.	HOW PROTECTED.
	No. per Pole.	Nominal Area per Pole.	In Circuit. When Running.	In Circuit. When Manœuvring.	Rule.				
MAIN GENERATORS	2	0.6	1,000	1,000	1,320	600	V.C.	Grade 660v.	Neoprene : Braided
GENERATOR FIELDS	1	0.01	10	10	45	195	"	"	L.C.B.
MAIN MOTORS	2	0.5	1,000	1,000	1,144	600	V.C.	"	L.C.B
MOTOR FIELDS	1	0.01	22.5	0–22.5	45	165	"	"	"
CONTROL CIRCUITS									
OTHER CIRCUITS:—									
Motor Short-circuiting Contactors	2	0.5	1,000	1,000	1,144	600	V.C.	"	L.C.B.
—									

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

The foregoing is a correct description,

FOR WILLIAM DENNY & BROTHERS LIMITED. *Electrical Engineers.* *Date* 3rd July 1951.

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

FOR WILLIAM DENNY & BROTHERS LIMITED.
Campbell
DIRECTOR
Builders' Signature. *Date* 3rd July 1951.

Is this machinery duplicate of a previous case No *If so, state name of vessel* —

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

The "Constant-current" Propulsion equipment installed in this ship has been constructed & fitted under the supervision of the Surveyors in accordance with the Rules & the approved plans, tested under full working conditions & found satisfactory.
~~The materials & workmanship are good.~~ E.

Noted Exs 8/8/51

27.7.51 RC

The amount of Entry Fee	1/3 Gls. £ 23 : 15 :	When applied for,	4.6 1951
	2/3 Man. 47 : 10 :		
	Lon. 10 : 10		
Travelling Expenses (if any)	£ 2 : 8 :	When received,	3.7 1951
	Lon.		

C. Haffner.
Surveyor to Lloyd's Register of Shipping.

Date GLASGOW 31 JUL 1951

Committee's Minute Sec Gls. F.E. Machy. Rpt 77102

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