

REPORT ON ELECTRICAL EQUIPMENT.

(OTHER THAN FOR THE PROPULSION OF THE VESSEL)

MAR 16 1938

Date of writing Report 11/3/1938 When handed in at Local Office 14. 3. 1938 Port of BARROW
 No. in Survey held at BARROW Date, First Survey 5/10/37 Last Survey 8/3/1938
 Reg. Book. " (Number of Visits 12)
34400 on the T.S. STRATHALLAN Tons { Gross 23721.95
 Net 14230.22
 Built at BARROW By whom built VICKERS-ARMSTRONGS LTD Yard No. 723 When built 1938
 Owners P.O STEAM NAVIGATION CO. Port belonging to
 Electric Light Installation fitted by VICKERS-ARMSTRONGS LTD. Contract No. 723 When fitted 1938
 Is the Vessel fitted for carrying Petroleum in bulk No.

System of Distribution Double WirePressure of supply for Lighting 220 volts, Heating 220 volts, Power 220 volts.Direct or Alternating Current, Lighting Direct Power DirectIf alternating current system, state frequency of periods per second ✓Has the Automatic Governor been tested and found efficient when the whole load is suddenly thrown on or off Yes.Generators, do they comply with the requirements regarding temperature rise Yes., are they compound wound Yes.are they over compounded 5 per cent. Yes., if not compound wound state distance between each generator ✓Where more than one generator is fitted are they arranged to run in parallel Yes., is an adjustable regulating resistance fitted inseries with each shunt field Yes. Have certificates of test results for machines under 100 kw. been submitted andapproved ✓ Have machines over 100 kw. been inspected by the Surveyors during manufacture and testing Yes.Have certificates for generators under 100 kw. been supplied and approved ✓Are all terminals accessible, clearly marked, and furnished with sockets Yes., are they so spaced or shielded that they cannot be accidentally earthed,short circuited, or touched Yes. Are the lubricating arrangements of the generators as per Rule Yes.Position of Generators Turbo. generator Room. G. Deck (Adjacent to Engine Room Hatch), is the ventilationin way of the generators satisfactory Yes. are they clear of all inflammable material Yes. if situated near unprotectedwoodwork or other combustible material, state distance of same horizontally from or vertically above the generators ✓ and ✓are the generators protected from mechanical injury and damage from water, steam or oil Yes., are their axes of rotation fore and aft Yes.Earthing, are the bedplates and frames of the generating plant efficiently earthed Yes. are the prime movers and their respective generatorsin metallic contact Yes. Main Switch Boards, where placed In Turbo. generator Room (Switchboard in 3 sections1. P.M., 1. Centre, 1. Starboard) If the generators and main switchboard are not placed in the same compartment, is each generator provided witha fuse on each insulated pole as near as possible to the terminals of the generator, additional to that provided on the main switchboard ✓Switchboards, are they placed in accessible positions, free from inflammable gases and acid fumes Yes., are they protected from mechanicalinjury and damage from water, steam or oil Yes., if situated near unprotected woodwork or other combustible material, state distance of samehorizontally from or vertically above the switchboards ✓ and ✓, are they constructed wholly of durable, non-ignitable non-absorbentmaterials Yes., is all insulation of high dielectric strength and of permanently high insulation resistance Yes.is it of an approved type Yes., if semi-insulating material is used, are all conducting parts insulated from the slab with mica or micanite or othernon-hygroscopic insulating material, and the slab similarly insulated from its framework ✓, is the non-hygroscopic insulating material of an approvedtype ✓, and is the frame effectively earthed Yes. Are the fittings as per Rule regarding:— spacing or shielding of live partsYes., accessibility of all parts Yes., absence of fuses on back of board Yes., temperature rise ofomnibus bars Yes., individual fuses to voltmeter, pilot or earth lamp Yes., are moving parts of switches alive in the"off" position No. are all screws and nuts securing connections effectively locked Yes. are any fuses fitted on the live side ofswitches No. Main Switchgear, description of switchgear for each generator and each outgoing circuit, and arrangement of equalizer switchesEach Dynamo: 2500 AMP. Circuit Breakers. Pos. & Equal. Hand operated. Neg. C.C. operated fitted with O.P. Release Current, Shunt& Preference Trips. Branch Circuits: D.P. Hand operated Circuit Breakers with O.P. trips & D.P. switches & D.P. fuses.Are turbine driven generators fitted with emergency trip switch as per rule Yes. Are cupboards or compartments containing switchboards composed offire-resisting material or lined with approved material Yes. Instruments on main switchboard 15 ammeters 3vltmeters ✓ synchronising device for paralleling purposes. For compound machines is the ammeter connected on the opposite pole to equaliser connectionYes. Earth Testing, state what means are provided at the main switchboard for indicating the state of the insulation of the systemEarth Lamps. Switches, Circuit Breakers and Fusible Cut-outs, ✓ have the reverseddo they comply with the requirements of the Rules. Yes. are the fusible cutouts of an approved type Yes.

current protection devices been tested under working conditions. *Yes* are all fuses labelled as per rule. *Yes*

Joint Boxes, Section and Distribution Boards, is the construction, protection, insulation, material, and position of these as per rule. *Yes*
Cables: *Single, Twin* are the cables insulated and protected as per Tables IV, V, X, XI, XII or XIII of the Rules. *Yes*

If the cables are insulated otherwise than as per Rule, are they of an approved type. *Yes* **Fall of Pressure,** state maximum between bus bars and any point of the installation under maximum load. *8. Volts*

Cable Sockets, are the ends of all cables having a sectional area of 0.04 square inch and above provided with soldering sockets. *Yes* **Paper Insulated and Varnished Cambric Insulated Cables,**

If conductors are paper or varnished cambric insulated, is the dielectric at the exposed ends of the conductor protected from moisture by being suitably sealed with insulating compound. *Yes* or waterproof insulating tape. *Yes* **Cable Runs,** are the cables fixed as far as possible in accessible positions

not exposed to drip or accumulation of water or oil, or to high temperature from boilers, steam pipes, uptakes or other hot objects, or to avoidable risk of mechanical damage. *Yes* are cables laid under machines or floorplates. *Yes* if so, are they adequately protected. *Yes*

Are cables in machinery spaces, galleys, lavatories, bathrooms and lavatories lead covered or run in conduit. *Yes* **Support and Protection of Cables,** state how the cables are supported and protected. *Generally in separate tray, mach. & cases. Solid tray open in some places. Sec'd wood casing & conduit.*

If cables are run in wood casings, are the casings and caps secured by screws. *Yes* are the cap screws of brass. *Yes* are the cables run in separate grooves. *Yes* If armoured and lead covered cables are secured by metal clips, are the clips spaced as per Table VIII. *Yes*

Refrigerated Chambers, are the cables and fittings in accordance with the special requirements. *Yes*

Joints in Cables, state if any, and how made, insulated, and protected. *None made*

Watertight Glands and Deck Tubes, are all cables passing through decks and watertight bulkheads provided with deck tubes or watertight glands. *Yes*

Bushes in Beams and Non-watertight Partitions, where unarmoured cables pass through beams and non-watertight partitions, are the holes efficiently bushed. *Yes* state the material of which the bushes are made. *Brass or Fibre*

Earthing Connections, state what earthing connections are fitted and their respective sectional areas. *Yes*

are their connections made as per Rule. *Yes*

Alternative Lighting, are the groups of lights in the propelling machinery space arranged as per Rule. *Yes* **Emergency Supply,** state position and method of control of the emergency supply and how the generator is driven. *Diesel driven. Circuit Breaker D.P. with 4k*

Reverse Trip to Bankers. C/O Switch to connect emergency circuits to either main or emergency dynamo.

Navigation Lamps, are these separately wired. *Yes* controlled by separate switch and separate fuses. *Yes* are the fuses double pole. *Yes* are the switches and fuses grouped in a position accessible only to the officers on watch. *Yes*

has each navigation lamp an automatic indicator as per Rule. *Yes* **Secondary Batteries,** are they constructed and fitted as per Rule. *Yes* are they ventilated as per Rule. *Yes*

Fittings, are all fittings on weather decks, in storerooms and engine rooms and wherever exposed to drip or condensed moisture, watertight. *Yes* are any fittings placed in spaces in which goods are liable to be stacked in close proximity to them; if so, how are they protected. *Yes*

are any fittings placed in spaces where inflammable or explosive dust or gases are liable to be present, if so, how are they protected. *Yes*

how are the cables led. *Yes*

where are the controlling switches situated. *Yes* are all fittings suitably ventilated. *Yes or W.T.* are all switches and lampholders constructed wholly of non-ignitable, non-absorbent materials. *Yes*

Heating and Cooking Appliances, are they constructed and fitted as per Rule. *Yes* are air heaters constructed and fitted as per Rule. *Yes*

Searchlight Lamps, No. of *1* whether fixed or portable. *Fixed on Rail* **Motors,** are their working parts readily accessible. *Yes* are the coils self-contained and readily removable for replacement. *Yes*

are the brushes, brush holders, terminals and lubricating arrangements as per Rule. *Yes* are the motors placed in well-ventilated compartments in which inflammable gases cannot accumulate and clear of all inflammable material. *Yes or best.*

are they protected from mechanical injury and damage from water, steam or oil. *Yes* are their axes of rotation fore and aft (or athwartships), if situated near unprotected woodwork or other combustible material, are the motors of the totally enclosed, pipe ventilated, forced draught, drip or flame proof type. *Yes*

if not of this type, state distance of the combustible material horizontally or vertically above the motors. *Yes* and *Yes*

have machines of over 100 BHP been inspected by the Surveyors during manufacture and testing. *Yes* have certificates for all motors for essential services been supplied and approved. *Yes*

Control Gear and Resistances, are the generator field and motor speed regulators, starters and controllers constructed and fitted as per Rule. *Yes* **Lightning Conductors,** where lightning conductors are required, are these fitted as per Rule. *Yes*

Ships carrying Oil having a Flash Point less than 150° F. Have the special requirements of the Rules been complied with regarding switches, joint boxes, section and distribution boards, protection of cables, method of distribution, lead of cables, lights and fittings. *Yes*

are all fuses of the filled cartridge type. *Yes* are they of an approved type. *Yes*

If portable lamps for use in dangerous spaces are supplied, are they of a self-contained, battery-fed flameproof type approved for use in dangerous spaces. *Yes*

Spare Gear, if the vessel is for open sea service have spares been supplied as per Rule. *Yes* are they suitably stored in dry situations. *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 | 500 | 220 | 2270 | 900 | Steam Turbine | | |
| AUXILIARY | | | | | | | | |
| EMERGENCY | 1 | 110 | 220 | 500 | 600 | 6 Cyl. Diesel Engine. | | |
| ROTARY TRANSFORMER | | | | | | | | |

GENERATOR, LIGHTING AND HEATING CONDUCTORS.

| DESCRIPTION. | CONDUCTORS. | | COMPOSITION OF STRAND. | | TOTAL MAXIMUM CURRENT. | | Approximate Length. (Lead and Return.) Feet. | Insulated with | HOW PROTECTED. |
|------------------------|---------------|--------------------------------------|------------------------|-----------|------------------------|-------|--|----------------|----------------|
| | No. per Pole. | Total Nominal Area per Pole Sq. Ins. | No. | Diameter. | Circuit. | Rule. | | | |
| MAIN GENERATOR | | | | | | | | | |
| EQUALISER CONNECTIONS | | | | | | | | | |
| AUXILIARY GENERATOR | | | | | | | | | |
| EMERGENCY GENERATOR | | | | | | | | | |
| ROTARY TRANSFORMER | | | | | | | | | |
| ENGINE ROOM | | | | | | | | | |
| BOILER ROOM | | | | | | | | | |
| AUXILIARY SWITCHBOARDS | | | | | | | | | |
| ACCOMMODATION | | | | | | | | | |
| WIRELESS | | | | | | | | | |
| SEARCHLIGHT | | | | | | | | | |
| MASTHEAD LIGHT | | | | | | | | | |
| SIDE LIGHTS | | | | | | | | | |
| COMPASS LIGHTS | | | | | | | | | |
| POOP LIGHTS | | | | | | | | | |
| CARGO LIGHTS | | | | | | | | | |
| HEATERS | | | | | | | | | |

for details see "As Fitted" Books of Diagrams Aug 1922. 723/52. 723/59. 723/61.

MOTOR CONDUCTORS.

| DESCRIPTION. | No. of Motors. | CONDUCTORS. | | COMPOSITION OF STRAND. | | TOTAL MAXIMUM CURRENT. | | Approximate Length. (Lead and Return.) Feet. | Insulated with | HOW PROTECTED. |
|-------------------------|----------------|---------------|--------------------------------------|------------------------|-----------|------------------------|-------|--|----------------|----------------|
| | | No. Per Pole. | Total Nominal Area per Pole Sq. Ins. | No. | Diameter. | In Circuit. | Rule. | | | |
| BALLAST PUMP | | | | | | | | | | |
| MAIN BILGE LINE PUMPS | | | | | | | | | | |
| GENERAL SERVICE PUMP | | | | | | | | | | |
| EMERGENCY BILGE PUMP | | | | | | | | | | |
| SANITARY PUMP | | | | | | | | | | |
| CIRC. SEA WATER PUMPS | | | | | | | | | | |
| CIRC. FRESH WATER PUMPS | | | | | | | | | | |
| AIR COMPRESSOR | | | | | | | | | | |
| FRESH WATER PUMP | | | | | | | | | | |
| ENGINE TURNING GEAR | | | | | | | | | | |
| ENGINE REVERSING GEAR | | | | | | | | | | |
| LUBRICATING OIL PUMPS | | | | | | | | | | |
| OIL FUEL TRANSFER PUMP | | | | | | | | | | |
| WINDLASS | | | | | | | | | | |
| WINCHES, FORWARD | | | | | | | | | | |
| WINCHES, AFT | | | | | | | | | | |
| STEERING GEAR— | | | | | | | | | | |
| (a) MOTOR GENERATOR | | | | | | | | | | |
| (b) MAIN MOTOR | | | | | | | | | | |
| WORKSHOP MOTOR | | | | | | | | | | |
| VENTILATING FANS | | | | | | | | | | |

for details see "As Fitted" Books of Diagrams Aug 1922. 723/52. 723/59. 723/61.

The Electrical Equipment is installed in accordance with the approved plans.

All Insulated Conductors are guaranteed to withstand the immersion and resistance tests specified in the Rules.

The foregoing is a correct description.

J. A. Seymour Electrical Engineers.

Date *8 March 1938*

COMPASSES.

Minimum distance between electric generators or motors and standard compass *37 ft. approx (Boat Hoist Bumps)*

Minimum distance between electric generators or motors and steering compass *33 ft do do*

The nearest cables to the compasses are as follows:—

A cable carrying *2* Amperes *15* feet from standard compass *10* feet from steering compass.

A cable carrying *1* Amperes *10* feet from standard compass *10* feet from steering compass.

A cable carrying *1* Amperes *10* feet from standard compass *10* 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 *nil* degrees on *any* course in the case of the standard compass, and *nil* degrees on *any* course in the case of the steering compass.

J. M. Omslow

Builder's Signature.

Date *8/3/38*

Is this installation a duplicate of a previous case *Yes.* If so, state name of vessel *T.S. STRATHEDEN*

General Remarks (State quality of workmanship, opinions as to class, &c. *This installation has been fitted on board under special survey and in accordance with the approved plans and has tested under full working conditions and found satisfactory. The materials and workmanship have been found to be good and sound.*

Noted

HRM

18.3.38

Total Capacity of Generators *1610* Kilowatts.

The amount of Fee ... £ *85 : 5 : 0* When applied for, *15.3.1938*
LONDON *17.1.0*
LIV. *34.2.0*
BARROW *34.2.0*
Travelling Expenses (if any) £ *14 : 3 : 0* When received, *26.3.1938*
(LIVERPOOL) *28.3.*

R. C. Clayton + J. McCulligan
Surveyors to Lloyd's Register of Shipping.

Committee's Minute *FRI 18 MAR 1938*

Assigned *See also T.C. report*